

**2012-13 Winter Mark-Selective Recreational Chinook Fisheries
In Marine Areas 6, 7, 8-1, 8-2, 9, 10, 11 and 12**

Post-season Report

REVISED DRAFT

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INTRODUCTION

In recent years, abundant runs of hatchery Chinook salmon (*Oncorhynchus tshawytscha*) have been mixed with depressed runs of wild Chinook salmon in the marine environments of the Strait of Juan de Fuca and Puget Sound. Providing recreational anglers with opportunities to harvest abundant hatchery stocks while simultaneously protecting weaker, wild stocks has proven to be a significant conservation and management challenge. The combination of large-scale hatchery marking (i.e., fin clipping) programs and mark-selective harvest regulations makes it possible for anglers to pursue and harvest hatchery Chinook salmon while minimally impacting wild salmon populations. In such “mark-selective fisheries” (MSFs), anglers are generally allowed to retain adipose-fin clipped (“marked”) hatchery fish and are required to release unharmed any unclipped (“unmarked”, predominantly wild) salmon encountered¹.

Since the Washington Department of Fish and Wildlife (WDFW) implemented the first marine mark-selective Chinook fisheries in Marine Catch Areas 5 and 6 (Strait of Juan de Fuca) in 2003 based on state-tribal agreements (Thiesfeld and Hagen-Breaux 2005a, WDFW 2008a), mark-selective Chinook salmon fishing regulations have been implemented on a pilot basis in multiple Puget Sound Marine Catch Areas during both the summer and winter seasons. As of the close of the summer 2013 fishing season, pilot *summer* Chinook MSFs have occurred in Areas 5 and 6 for eleven consecutive seasons, in Areas 9, 10, 11, and 13 for seven consecutive seasons and in Area 12 for two consecutive seasons. Additionally, pilot *winter* Chinook MSFs have occurred in Areas 8-1 and 8-2 for eight consecutive seasons, in Areas 7, 9 and 10 for six consecutive seasons, in Areas 11 and 12 for four consecutive seasons and in Area 6 for one season².

During the 2012-13 winter season (October 2012 through April 2013), WDFW implemented eight pilot Chinook MSFs in Areas 6, 7, 8-1, 8-2, 9, 10, 11 and 12. The seasons in each of the areas were as follows:

- Area 6 from December 1, 2012 through April 10, 2013;
- Area 7 from December 1, 2012 through April 30, 2013;
- Areas 8-1 and 8-2 from November 1, 2012 through April 30, 2013;
- Area 9 from November 1-30, 2012 and January 16 – April 15, 2013;
- Area 10 from October 1, 2012 through January 31, 2013;
- Area 11 from February 1, 2013 through April 30, 2013; and
- Area 12 from October 1 – December 31, 2012 and February 1 - April 30, 2013.

¹ The regulations specific to winter Chinook MSFs in Puget Sound Marine Catch Areas allowed for the retention of up to two legal-sized (≥ 22 inches [56 cm]) marked Chinook salmon per day and required the immediate release of all unmarked or sublegal Chinook. Additionally, anglers were: *i*) required to use single-point, barbless hooks while fishing for salmon, *ii*) held to a combined (all salmon species) two-fish daily limit, and *iii*) held to a handling rule that prevented them from bringing unmarked and/or sublegal Chinook aboard their vessels.

² For information regarding effort, harvest and impacts estimates related to these fisheries, see the references listed at the end of this report, or visit: [http://wdfw.wa.gov/publications/search.php?Cat=Fishing/Shellfishing&SubCat=Selective Fishing](http://wdfw.wa.gov/publications/search.php?Cat=Fishing/Shellfishing&SubCat=Selective%20Fishing). The 2013 summer mark-selective fisheries report is currently in preparation.

Consistent with the 2004 (and 2010 update) Puget Sound Chinook Harvest Management Plan (Puget Sound Indian Tribes and WDFW 2004 and 2010), a key goal of implementing each of these Chinook MSFs has been to provide meaningful opportunity to the recreational angling public while minimally impacting ESA-listed Puget Sound Chinook salmon.

Comprehensive Sampling and Monitoring Program

WDFW's Puget Sound Sampling Unit (PSSU) was tasked with implementing a comprehensive sampling and monitoring program in Areas 6, 7, 8-1, 8-2, 9,10,11 and 12 to collect the data needed to evaluate each pilot Chinook MSF and its impact on unmarked salmon. Through state-tribal agreement (WDFW and NWIFC 2012), we developed area-specific sampling plans consisting of several comprehensive and complementary sampling components, including dockside creel sampling, test fishing, on-water or aerial effort surveys, and angler-completed voluntary trip reports (VTRs). We tailored area-specific sampling plans so that we could reliably estimate the following critical parameters needed for evaluating MSFs:

- i) the mark rate of the targeted Chinook population
- ii) the total number of Chinook salmon harvested (by size [legal or sublegal] and mark-status [marked or unmarked] group)
- iii) the total number of Chinook salmon released (by size and mark-status group)
- iv) the coded-wire tag (CWT) and/or DNA-based stock composition of marked and unmarked Chinook mortalities³
- v) the total mortality of marked and unmarked double index tag (DIT) CWT stocks

In addition, we acquired and analyzed relevant data characterizing other aspects of the pilot fisheries, including descriptors of fishing effort, fishing success (catch [landed Chinook] per unit effort), the length composition of encountered Chinook, and the overall intensity of our sampling efforts.

Reporting Efficiencies

In July 2010, technical staffs from the WDFW Puget Sound Sampling Unit, Northwest Indian Fisheries Commission (NWIFC), and Puget Sound Treaty Tribes met to discuss potential reporting efficiencies in WDFW's Chinook MSF post-season reports. NWIFC and tribal representatives had initiated the idea for such a meeting, considering that WDFW had been submitting a separate post-season report for each area and season (since 2003) to the co-managers, resulting in redundancies between individual reports, particularly in the Methods section. Also, over the years we kept adding sections to the selective fishery annual reports, in response to individual tribal co-manager requests, and sustained those additions in each future report, resulting in ever-lengthening post-season reports. From both the WDFW and tribal technical perspectives, we needed to prioritize the most essential reporting elements and achieve efficiencies to streamline the selective fishery reporting work load.

³ Though the necessary tissue samples have been collected, DNA-based estimates of stock composition are presently unavailable for Puget Sound/Strait of Juan de Fuca mark-selective fisheries. In the present report, methods for producing CWT-based (unexpanded) estimates of the stock composition of marked Chinook harvest are provided.

Thus, at the July 2010 meeting the WDFW and tribal staffs worked on prioritizing the most essential elements (i.e., tables, figures, and appendices) needed in WDFW's annual post-season selective fishery reports in an effort to define reporting efficiencies. Based on these decisions (details available in a WDFW memo dated August 16, 2010 summarizing the July 2010 meeting), we began implementing reporting efficiencies starting with the 2009-10 winter Chinook MSF post-season report and continuing thereafter.

At the July 2010 meeting we also agreed that a key efficiency in the annual reporting process would be for WDFW staff to produce a centralized Methods Report. The Methods Report would be a stand-alone document that includes the details of each area's Chinook MSF study design (for both winter and summer fisheries), sampling procedures, data analysis methods, and all equations used to generate estimates and variances. Thus, we refer the reader to our Methods Report (WDFW 2012a) for detailed descriptions of the diverse study designs and protocols used to monitor and evaluate the Chinook MSFs in Areas 6, 7, 8-1, 8-2, 9, 10, 11, and 12 during winter 2012-13.

In the following pages, we report the results generated through our monitoring activities during the 2012-13 winter Chinook MSFs. We report results based on our more efficient reporting format agreed-to between state and tribal technical representatives, in which we focus on presenting data tables and figures rather than interpretive text (unless text is needed to specify noteworthy in-season adjustments or other circumstances unique to the particular season). We present 2012-13 winter Chinook MSF results in separate chapters (1 through 7) by area, and within each chapter the data are presented in a series of tables and figures generally according to the following sequence: *i*) estimates of fishery characteristics obtained from the dockside creel survey data, including catch and effort total estimates, Chinook length-frequency data, and CWT recovery results; *ii*) results from our recreational test fishery (where applicable); *iii*) results from our VTR collection efforts; *iv*) total mortality estimates of marked and unmarked DIT CWT stocks by hatchery and brood year; *v*) total fishery Chinook encounters and impacts—estimated based on creel survey and test fishery or VTR data—which we compare with pre-season expectations (based on Fishery Regulation Assessment Model [FRAM] predictions); *vi*) sample rate information based on dockside sampling of harvested Chinook; and *vii*) historical Chinook encounters estimates for each area's winter Chinook MSF.

RESULTS

1) Marine Area 6 Winter Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a winter Chinook MSF in Marine Area 6 for the first time from December 1, 2012 through April 10, 2013. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program in Area 6 throughout the season in order to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included dockside creel sampling, aerial effort surveys and collection of VTRs from the angling public. **Table 1.1** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). In this section we present results from our monitoring activities during the Area 6 winter Chinook MSF from December 1, 2012 through April 10, 2013. In addition to the major components of the results described previously (page 3), we present aerial survey and dockside data used to estimate the sample fraction in Area 6 (see WDFW 2012a, *Aerial-Access Design*). The four sites included in the Area 6 dockside sample frame are John Wayne Marina, Port Angeles Boat Haven, Ediz Hook and Coronet Ramp, which are assumed to be the highest-use access sites for Area 6 anglers. The Olympic Peninsula Derby took place from February 16-18 over portions of Marine Areas 6, 7 and 9. The proportions of effort and catch that occurred in each area were estimated based on dockside sampling efforts at designated weigh-in stations during the derby. These proportions were applied to total reported effort and catch in order to allocate them by area.

Table 1.1 Sampling/estimation details on target parameters associated with the overall Area 6 Chinook MSF monitoring program.

Activity	Focal Parameter(s)	Secondary Parameter(s)	Sample Unit(s)	Finest Estimation Time Step	Comments
Dockside Creel Sampling	Fishing effort (boat & angler trips); kept and released fish	Catch rates (CPUE); length, age, and CWT composition of harvest ¹ ; collection of angler fishing methods.	Angler trip; kept fish; reported fish release	Two weeks	Creel estimates were produced for two-week estimation periods and stratified into “weekday” (Mon.-Thurs.) and “weekend” (Fri.-Sun.) day-type strata within weeks. For the weekday stratum we sampled $n=2$ days out of $N=8$ available weekdays per two-week period. For the weekend stratum we sampled $n=2$ days out of $N=3$ available weekend days per week.
Aerial Surveys	Fraction of Area 6 effort (boats) captured in the four-site sample frame via creel surveys (Sample Fraction, f_{ij}).	Total boat counts at assumed peak effort time interval (instantaneous count); spatial distribution of fishing boats in the area.	Boats	Season	The sample fraction was calculated for individual aerial survey dates (see Table 1.11 ; $n=10$ surveys conducted out of $N=131$ days available in the season). Season-wide sample fraction was calculated as the average sample fraction over the 10 individual aerial surveys.
Voluntary Trip Reports (VTRs)	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Encounter data for non-Chinook species (e.g., Coho) that the angler may record on the VTR form	Fish encounter	Season	VTR data (Table 1.5) were used to estimate the size/mark-status proportions (LM = 65%, LU = 16%, SM = 13%, SU = 5%) needed to produce encounter and mortality estimates.
Overall Fishery Impacts Estimation	Total Chinook encounters and mortalities, by size/mark-status group	Ratios of encounters and mortalities per kept Chinook	N/A	Season	Estimated on a monthly time step but considered at the season-total level.
Coded-wire tag (CWT) Impacts Estimation	Marked/unmarked double-index tag (DIT) encounters and mortalities	N/A	N/A	Season	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

¹The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.

²Though samples were collected, DNA-based estimates of stock composition are not yet available for this fishery.

Table 1.2 Estimates of total fishing effort and total salmon catch (harvest and releases) during the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
Dec	49	01-Dec	02-Dec	24	47	8	0	3	3	14
	50	03-Dec	09-Dec	27	41	9	0	3	3	16
	51	10-Dec	16-Dec	41	69	22	0	8	8	39
	52	17-Dec	23-Dec	67	136	36	0	13	14	63
	53	24-Dec	30-Dec	96	184	115	0	43	44	202
Jan	54/1	31-Dec	06-Jan	78	141	39	0	15	15	69
	2	07-Jan	13-Jan	87	159	26	0	10	10	45
	3	14-Jan	20-Jan	142	242	150	0	56	58	264
	4	21-Jan	27-Jan	49	80	18	0	7	7	31
	5	28-Jan	03-Feb	122	196	86	0	32	33	150
Feb	6	04-Feb	10-Feb	142	248	64	2	24	22	113
	7	11-Feb	17-Feb	73	129	52	1	19	19	91
	8	18-Feb	24-Feb	44	90	36	0	13	14	64
	9	25-Feb	03-Mar	126	241	73	0	27	28	128
Mar	10	04-Mar	10-Mar	168	294	65	0	24	25	114
	11	11-Mar	17-Mar	84	130	72	0	27	27	126
	12	18-Mar	24-Mar	89	152	63	0	23	24	110
	13	25-Mar	31-Mar	146	273	80	0	30	31	141
Apr	14	01-Apr	07-Apr	100	185	54	0	20	21	94
	15	08-Apr	10-Apr	111	195	111	18	41	25	194
Area 6 Season Sub-Total:				1,814	3,230	1,177	21	438	431	2,067
Olympic Pen. Derby Feb 16-18 2013				725	1,686	232	0	86	89	407
Area 6 Season Total:				2,539	4,916	1,409	21	524	520	2,474
Variance:				31,990	91,497	25,970	18	67,054	4,668	86,159
SE:				179	302	161	4	259	68	294
CV (%):				7.0%	6.2%	11.4%	20.1%	49.4%	13.1%	11.9%
95% CI:				2,188-2,890	4,323-5,509	1,093-1,725	13-29	16-1,031	386-654	1,898-3,049

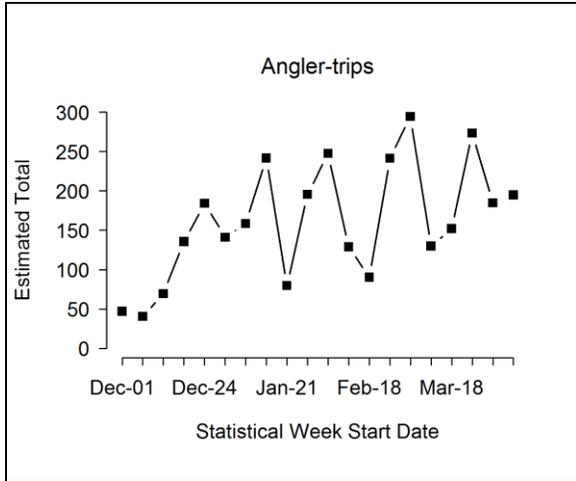


Figure 1.1 Temporal patterns in fishing effort during the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013.

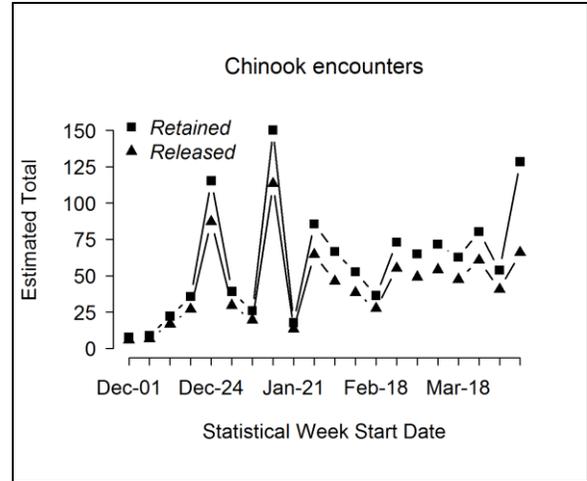


Figure 1.3 Temporal patterns in Chinook encounters (number retained and released) during the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013.

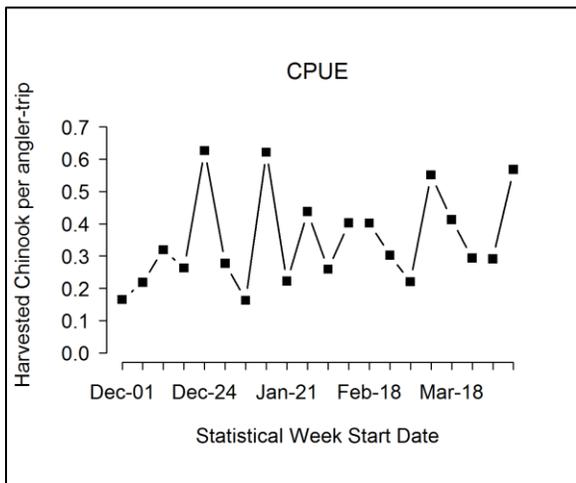


Figure 1.2 Temporal patterns in CPUE (number of Chinook landed per angler trip) during the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013.

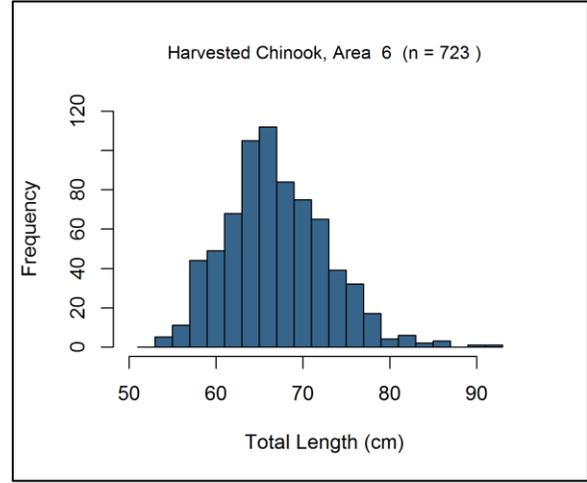


Figure 1.4 Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013.

Table 1.3 Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013.

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	716	7	723
Unmarked	6	0	6
Total	722	7	729

Table 1.4 Summary of CWTs recovered from Chinook salmon harvested during the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	Number DITs
British Columbia (13.7%)	Fraser River – Thompson River (2%)	Chilliwack River	Chilliwack River	1 (2%)	1
	Georgia Strait (11.8%)	Chemainus River	Nanaimo River	1 (2%)	0
		Cowichan River	Cowichan River	5 (9.8%)	0
Washington (80.4%)	Northern Washington (11.8%)	Friday Creek	Samish	1 (2%)	1
		Nooksack R - NF 01.0120	Kendall Creek	1 (2%)	1
		East Sound Bay (SAN)	Glenwood Springs	2 (3.9%)	0
		Samish R - 03.0005	Samish Hatchery	2 (3.9%)	2
		Sol Duc R - 20.0096	Lonesome Creek	1 (2%)	0
	Hood Canal (29.4%)	Purdy Creek - 16.0005	George Adams	8 (15.7%)	8
		Finch Creek - 16.0222	Hoodspout Hatchery	7 (13.7%)	0
	Northern Puget Sound (7.8%)	Tulalip Creek - 07.0001	Bernie Gobin	2 (3.9%)	0
		Wallace River - 07.0940	Wallace River	1 (2%)	0
		Whitehorse Springs	Whitehorse Pond	1 (2%)	0
	Skagit River (2%)	Cascade River - 03.1411	Marblemount	1 (2%)	0
	Mid Puget Sound (21.6%)	Big Soos Creek - 09.0072	Soos Creek	2 (3.9%)	2
		Gorst Creek - 15.0216	Gorst Rearing Pond	4 (7.8%)	0
		Grovers Creek Hatchery	Grovers Creek	1 (2%)	1
		Voight Creek - 10.0428	Voight Creek	4 (7.8%)	0
	Southern Puget Sound (5.9%)	Chambers Creek - 12.0007	Chambers Creek	1 (2%)	0
Clear Creek - 11.0013C		Clear Creek	1 (2%)	1	
Kalama Creek - 11.0017		Kalama Creek	1 (2%)	0	
Columbia River (3.9%)	Upper Col River (2%)	Similkameen River - 490325	Similkameen Hatchery	1 (2%)	0
	Snake River (2%)	NPT Hatchery	NPT Hatchery	1 (2%)	0
California (2%)	Sacramento River (2%)	Sac River at Discovery Park	Nimbus Fish Hatchery	1 (2%)	0
Total				51	17

Table 1.5 Total Chinook encountered (retained and released) by private-boat anglers logging their trips on VTRs, with estimates of legal-size and overall (legal and sublegal) mark rates during the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private VTR	209 1-trip VTRs, 366 Angler Trips	356	90	73	30	549	0.78	0.80
Size/mark-status composition:		0.65	0.16	0.13	0.05			
Variance:		(0.0004)	(0.0003)	(0.0002)	(0.0001)			

Table 1.6 Summary of season-wide fishery impact estimates for the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013. Release mortality rate = 0.15 for legal fish and 0.20 for sublegal fish. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	1,604	1,395	209	31	1,427	26,941	164	1105 - 1748	12
Legal UM	405	21	385	58	79	104	10	59 - 99	13
Sublegal AD	329	14	315	63	77	141	12	53 - 100	15
Sublegal UM	135	0	135	27	27	33	6	16 - 38	21
Total	2,474	1,430	1,044	179	1,609	27,219	165	1286 - 1932	10

Table 1.7 Comparison of modeled (FRAM model run 1512) and estimated total Chinook encounters for the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	442	307	135	25
	AD	2,157	1,647	510	1,433
	Total	2,599	1,954	645	1,458
	% Marked	83	84	79	98
Estimated (Creel) Encounters	UM	541	405	135	21
	AD	1,933	1,604	329	1,409
	Total	2,474	2,009	464	1,430
	% Marked	78	80	71	99

Table 1.8 Comparison of modeled (FRAM model run 1512) and estimated total Chinook mortalities for the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	95	1,638	1,733	106	1,503	1,609
Released Legal	43	103	146	58	31	89
Released Sublegal	27	102	129	27	63	90
Landed Only	25	1,433	1,458	21	1,409	1,430

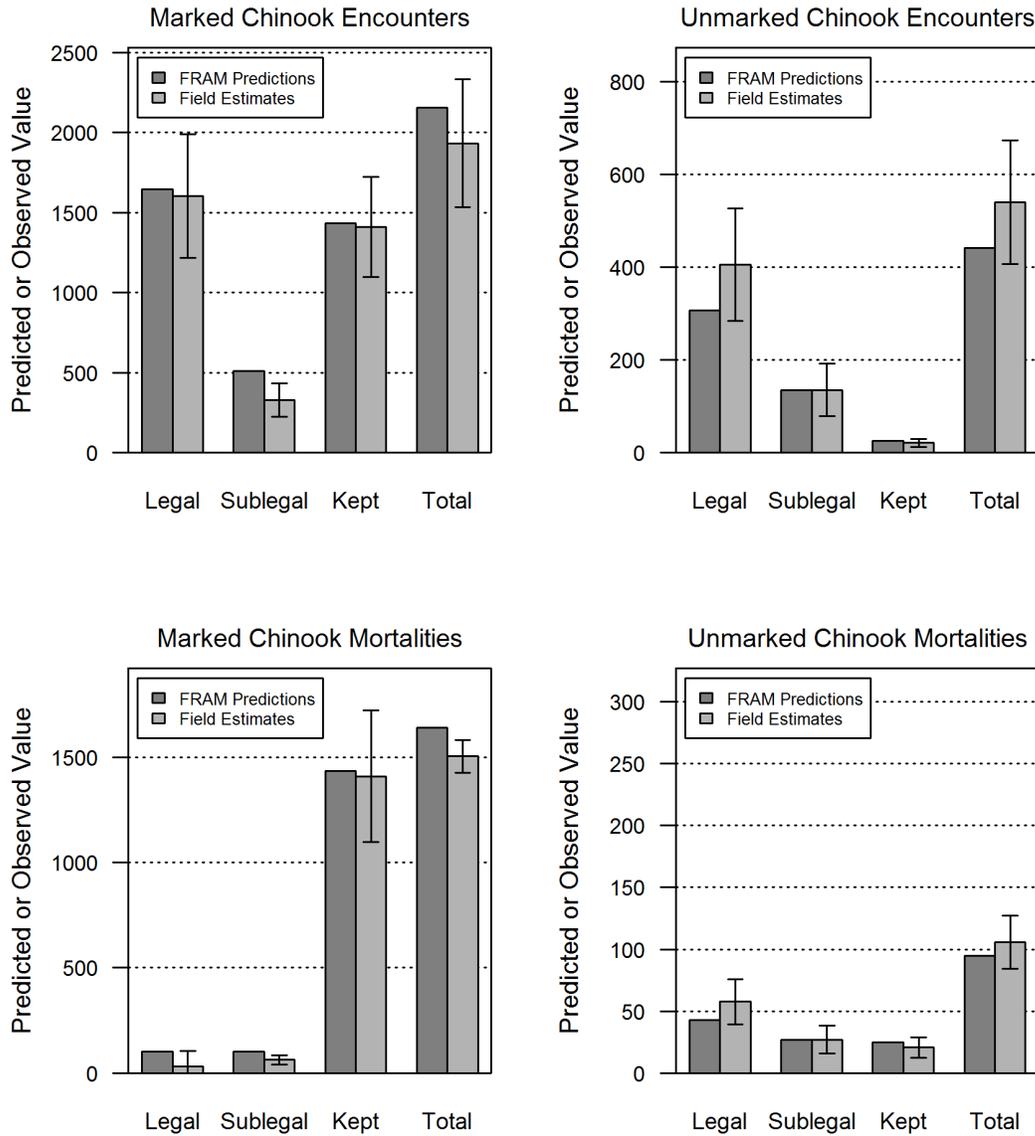


Figure 1.5 Comparison of modeled (FRAM model run 1512) and estimated total Chinook encounters and mortalities for the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013. Error bars represent approximate 95% confidence intervals for field estimates.

Table 1.9 Summary of double-index tagged (DIT) Chinook kept by anglers, and estimated total mortality of unmarked DIT Chinook due to hook-and-release impacts resulting from the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013. AD = marked (adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs'd	AD DIT Harvest		UM DIT Enc.	UM DIT Mortality		
			Est.	var(Est.)		Est.	var(Est.)	SE(Est.)
Clear Creek Hatchery	2010	1	0.0	0.0	2.0	2.0	1.886	1.4
George Adams Hatchery	2009	6	11.8	11.3	11.8	1.2	0.114	0.8
	2010	2	3.9	3.8	4.0	0.4	0.039	0.3
Grovers Creek Hatchery	2009	1	2.0	1.9	1.9	0.2	0.018	0.1
Chilliwack River Hatchery	2010	1	2.0	1.9	1.0	0.1	0.005	0.1
Kendall Creek Hatchery	2010	1	2.0	1.9	1.9	0.2	0.018	0.1
Samish Hatchery	2009	2	3.9	3.8	4.0	0.4	0.039	0.3
	2010	1	2.0	1.9	2.0	0.2	0.020	0.1
Soos Creek Hatchery	2009	2	3.9	3.8	4.1	0.4	0.041	0.3
Total		17	31.4	30.2	32.6	5.0	2.179	3.5

Table 1.10 Monthly sample rates (Total retained Chinook sampled¹ / Estimated retained Chinook) in the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013. AD = marked (adipose-clipped), UM = unmarked.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
December	49-53	1 Dec - 30 Dec	190	0	190	113	0	113	59.6%
January	54/1-5	31 Dec - 3 Feb	318	0	318	142	0	142	44.6%
February	6-9	4 Feb - 3 Mar	457	3	460	238	1	239	51.9%
March	10-13	4 Mar - 31 Mar	280	0	280	170	1	171	61.2%
April	14-15	1 Apr - 10 Apr	164	18	182	60	4	64	35.1%
Season Total			1,409	21	1,430	723	6	729	51.0%

¹ Number of retained Chinook sampled includes all retained Chinook inspected for CWTs, from all sites sampled during the winter 2012-13 Area 6 Chinook MSF (the four sample-frame sites included in the creel estimates, derby samples, and the fish sampled as part of baseline sampling in Area 6).

Table 1.11 Summary of aerial survey and dockside data used to estimate the fraction of Area 6 effort captured in the four-site sample frame during the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013. See Methods Report (WDFW 2012a) for computational details and notation.

Survey Date	Stratum	Aerial Survey Details			Dockside Sampling Details			Sample Fraction, f_{ij}
		Start Time	End Time	Total Boats, m_{ij}	Sampled Boats	Active Boats, X_{ij}	Total Boats, Sy_{ijk}	
5-Dec	Weekday	10:42	11:39	10	13	6	22	0.600
28-Dec	Weekend	10:38	11:38	12	24	12	24	1.000
10-Feb	Weekend	12:57	13:48	16	24	12	32	0.750
19-Feb	Weekday	11:20	12:08	9	5	1	45	0.111
8-Mar	Weekend	11:36	12:25	19	24	19	24	1.000
9-Mar	Weekend	12:35	13:10	17	30	14	36	0.824
15-Mar	Weekend	10:49	11:36	30	23	22	31	0.733
22-Mar	Weekend	13:30	14:20	2	2	1	4	0.500
24-Mar	Weekend	10:55	11:46	25	26	19	34	0.760
6-Apr	Weekend	10:43	11:29	16	10	8	20	0.500
Totals:				156	181	114	273	
Mean:				16	18	11	27	0.678
St Dev:				8.0	9.7	7.4	11.2	0.265
CV(%):				51.6%	53.8%	64.9%	41.1%	39.2%

Table 1.12 Fishery-total estimates of retained and released salmon (*other than Chinook*) in the Area 6 Chinook MSF from December 1, 2012 - April 10, 2013. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark-status.

Week	Start Date	End Date	Released Salmon			
			Coho AD	Coho UM	Coho UK	Unk Salmon
49	1-Dec	2-Dec	2	0	0	0
50	3-Dec	9-Dec	0	0	0	0
51	10-Dec	16-Dec	0	0	0	2
52	17-Dec	23-Dec	0	0	0	36
53	24-Dec	30-Dec	0	0	0	32
54/1	31-Dec	6-Jan	0	0	0	0
2	7-Jan	13-Jan	0	0	0	0
3	14-Jan	20-Jan	0	0	0	0
4	21-Jan	27-Jan	0	0	2	4
5	28-Jan	3-Feb	0	0	0	0
6	4-Feb	10-Feb	0	0	3	5
7	11-Feb	17-Feb	0	0	1	2
8	18-Feb	24-Feb	0	0	0	0
9	25-Feb	3-Mar	3	3	9	0
10	4-Mar	10-Mar	3	3	9	0
11	11-Mar	17-Mar	0	0	0	0
12	18-Mar	24-Mar	0	0	0	0
13	25-Mar	31-Mar	0	0	0	0
14	1-Apr	7-Apr	0	0	0	0
15	8-Apr	10-Apr	0	0	0	0
Area 6 Season Total:			8	6	23	82
Variance:			28	27	252	3,241
Standard Error:			5	5	16	57
CV (%):			70.1%	88.6%	68.0%	69.6%
95% CI:			0-18	0-16	0-54	0-193

Table 1.13 Season-total estimates of Chinook encounters by size/mark-status and total estimates of angler effort, summarized for the Area 6 Chinook MSF. Values may not add exactly due to rounding error.

Area	Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
			LM	LU	SM	SU	LM	LU	SM	SU	
6	Dec 1, 2012 - Apr 10, 2013	4,916	1,395	21	14	0	209	385	315	135	2,474

2) Marine Area 7 Winter Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a sixth consecutive winter Chinook MSF in Marine Area 7 from December 1, 2012 through April 30, 2013. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program in Area 7 throughout the season in order to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included dockside creel sampling, aerial effort surveys, test fishing and collection of VTRs from the angling public. **Table 2.1** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). In this section we present results from our monitoring activities during the Area 7 winter Chinook MSF from December 1, 2012 through April 30, 2013. In addition to the major components of the results described previously (page 3), we present aerial survey and dockside data used to estimate the sample fraction in Area 7 (see WDFW 2012a, *Aerial-Access Design*). The four sites included in the Area 7 dockside sample frame are Washington Park Ramp, Bellingham Ramp, Coronet Ramp and Friday Harbor Marina on San Juan Island, which are assumed to be the highest-use access sites for Area 7 anglers. Due to safety concerns and in an effort to improve sampling efficiencies, we modified the flight path of Area 7 aerial surveys to exclude the area of open water north of Patos Island beginning in December 2012. An examination of flight survey data from previous years suggests that approximately 5% of the boats observed during flights were located in this area. Given the limited amount of effort occurring in this area we assumed the effect on effort and harvest estimates would be negligible. Beginning on April 12, 2013, the daily limit of marked Chinook was reduced to one fish (from two) per angler due to higher than projected legal encounters. Total salmon harvest and release estimates presented in this chapter include only Chinook salmon because no other salmon were reported as retained or released during the Area 7 winter fishery.

Table 2.1 Sampling/estimation details on target parameters associated with the overall Area 7 Chinook MSF monitoring program.

Activity	Focal Parameter(s)	Secondary Parameter(s)	Sample Unit(s)	Finest Estimation Time Step	Comments
Dockside Creel Sampling	Fishing effort (boat & angler trips); kept and released fish	Catch rates (CPUE); length, age, and CWT composition of harvest ¹ ; collection of angler fishing methods.	Angler trip; kept fish; reported fish release	Two weeks	Creel estimates were produced for two-week estimation periods and stratified into “weekday” (Mon.-Thurs.) and “weekend” (Fri.-Sun.) day-type strata within weeks. For the weekday stratum we sampled $n=2$ days out of $N=8$ available weekdays per two-week period. For the weekend stratum we sampled $n=2$ days out of $N=3$ available weekend days per week.
Aerial Surveys	Fraction of Area 7 effort (boats) captured in the four-site sample frame via creel surveys (Sample Fraction, f_{ij}).	Total boat counts at assumed peak effort time interval (instantaneous count); spatial distribution of fishing boats in the area.	Boats	Season	The sample fraction was calculated for individual aerial survey dates (see Table 2.12 ; $n=16$ surveys conducted out of $N=151$ days available in the season). Season-wide sample fraction was calculated as the average sample fraction over the 16 individual aerial surveys.
Test Fishing	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Chinook length, age, and DNA-based ² stock composition; species composition of non-Chinook encounters	Fish encounter	Season	We used the test fishery data only to estimate the size/mark-status proportions (LM = 60%, LU = 21%, SM = 14%, SU = 5%; Table 2.5) needed to produce encounter and mortality estimates.
Voluntary Trip Reports (VTRs)	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Encounter data for non-Chinook species (e.g., Coho) that the angler may record on the VTR form	Fish encounter	Season	VTR data (Table 2.6) were not used for impact estimation steps due to the assumed higher data quality and sufficient sample size of test fishery data. See comment in row above.
Overall Fishery Impacts Estimation	Total Chinook encounters and mortalities, by size/mark-status group	Ratios of encounters and mortalities per kept Chinook	N/A	Season	Estimated on a monthly time step but considered at the season-total level.
Coded-wire tag (CWT) Impacts Estimation	Marked/unmarked double-index tag (DIT) encounters and mortalities	N/A	N/A	Season	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

¹The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.²Though samples were collected, DNA-based estimates of stock composition are not yet available for this fishery.

Table 2.2 Estimates of total fishing effort and total salmon catch (harvest and releases) during the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
Dec	49	01-Dec	02-Dec	42	80	42	0	16	20	77
	50	03-Dec	09-Dec	128	225	54	0	20	26	100
	51	10-Dec	16-Dec	68	113	30	0	11	14	55
	52	17-Dec	23-Dec	148	319	189	0	71	90	350
	53	24-Dec	30-Dec	252	519	324	0	121	154	598
Jan	54/1	31-Dec	06-Jan	173	379	154	0	58	73	285
	2	07-Jan	13-Jan	238	480	152	0	57	72	281
	3	14-Jan	20-Jan	340	689	376	0	141	179	695
	4	21-Jan	27-Jan	171	340	173	0	65	82	320
	5	28-Jan	03-Feb	258	495	169	0	63	80	313
Feb	6	04-Feb	10-Feb	318	647	234	3	88	109	433
	7	11-Feb	17-Feb	369	772	135	0	51	64	250
	8	18-Feb	24-Feb	106	198	38	0	14	18	70
	9	25-Feb	03-Mar	152	306	135	0	50	64	250
Mar	10	04-Mar	10-Mar	386	783	288	0	108	137	533
	11	11-Mar	17-Mar	116	253	81	0	30	39	150
	12	18-Mar	24-Mar	165	367	79	0	29	37	146
	13	25-Mar	31-Mar	438	1,025	136	0	51	64	251
Apr	14	01-Apr	07-Apr	101	177	46	0	17	22	85
	15	08-Apr	14-Apr	90	148	26	0	10	12	49
	16	15-Apr	21-Apr	41	66	18	0	7	9	33
	17	22-Apr	28-Apr	86	194	30	0	11	14	55
	18	29-Apr	30-Apr	20	40	5	0	2	3	10
Area 7 Season Sub-Total:				4,205	8,613	2,916	3	1,090	1,383	5,391
Resurrection Derby Dec 7-8, 2012				75	170	207	0	77	98	383
Roche Harbor Derby Feb 7-9, 2013				100	339	196	0	73	93	362
Anacortes Derby Mar 30 – 31, 2013				400	1,200	256	0	96	122	473
Area 7 Season Total:				4,780	10,322	3,575	3	1,336	1,696	6,609
Variance:				106,859	520,635	139,704	3	464,384	80,151	639,633
SE:				327	722	374	2	681	283	800
CV (%):				6.8%	7.0%	10.5%	64.6%	51.0%	16.7%	12.1%
95% CI:				4,139-5,421	8,908-11,736	2,842-4,308	0-6	0-2,672	1,141-2,251	5,042-8,177

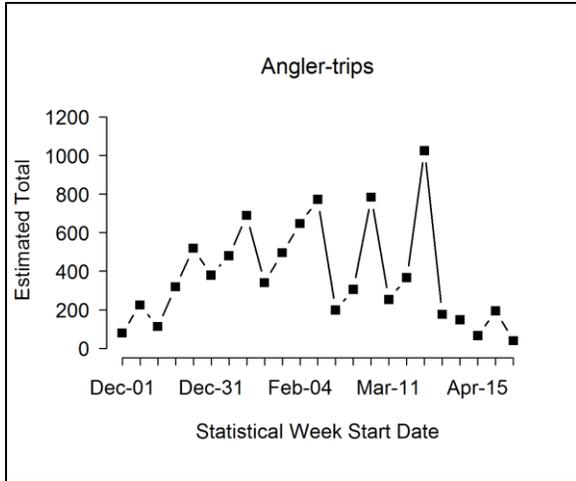


Figure 2.1 Temporal patterns in fishing effort during the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013.

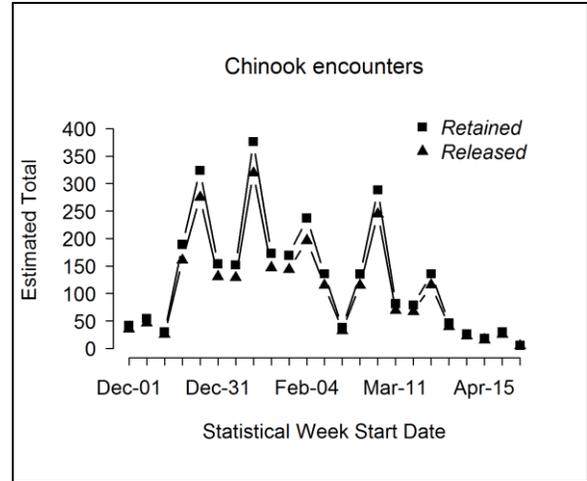


Figure 2.3 Temporal patterns in Chinook encounters (number retained and released) during the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013.

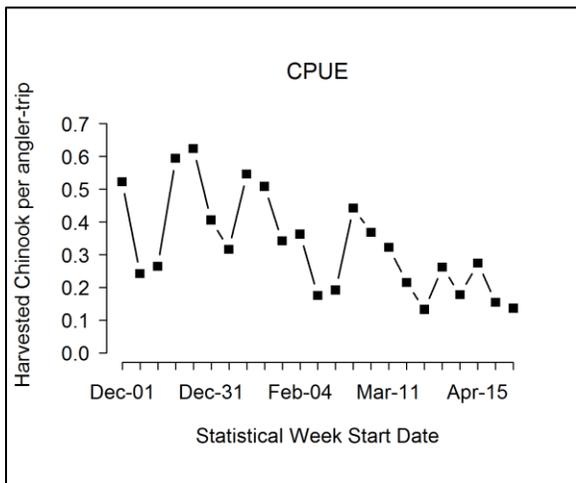


Figure 2.2 Temporal patterns in CPUE (number of Chinook landed per angler trip) during the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013.

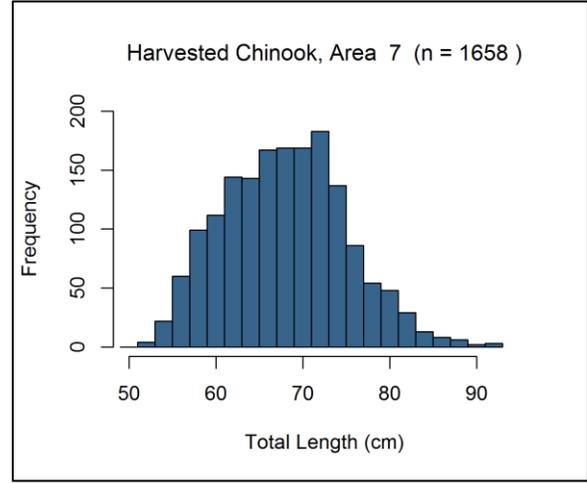


Figure 2.4 Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013.

Table 2.3 Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013.

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	1,609	49	1,658
Unmarked	3	0	3
Total	1,612	49	1,661

Table 2.4 Summary of CWTs recovered from Chinook salmon harvested during the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	Number DITs
British Columbia (24.8%)	Fraser River – Thompson River (9.4%)	Harrison River	Chehalis River H	1 (0.9%)	0
		Chilliwack R	Chilliwack River H	10 (8.5%)	10
	Georgia Strait (15.4%)	Cowichan River	Cowichan River H	18 (15.4%)	0
Washington (72.6%)	Northern Washington (17.1%)	Friday Creek - 03.0017	Samish Hatchery	10 (8.5%)	10
		Samish River - 03.0005	Samish Hatchery	2 (1.7%)	2
		East Sound Bay (SAN)	Glenwood Springs	4 (3.4%)	0
		Nooksack R - NF 01.0120	Kendall Creek H	4 (3.4%)	4
	Hood Canal (7.7%)	Purdy Creek - 16.0005	George Adams	7 (6.0%)	7
		Finch Creek - 16.0222	Hoodsport Hatchery	2 (1.7%)	0
	Northern Puget Sound (11.1%)	Tulalip Creek - 07.0001	Bernie Gobin H	3 (2.6%)	0
		Wallace River - 07.0940	Wallace River H	7 (6%)	6
		Whitehorse Springs	Stillaguamish H	2 (1.7%)	0
		Whitehorse Springs	Whitehorse Pond	1 (0.9%)	0
	Skagit River (18.8%)	Cascade River - 03.1411	Marblemount H	22 (18.8%)	10
	Mid Puget Sound (12.8%)	Big Soos Creek - 09.0072	Soos Creek H	2 (1.7%)	2
		Grovers Creek Hatchery	Grovers Creek H	4 (3.4%)	4
		Gorst Creek - 15.0216	Gorst Rearing Pond	3 (2.6%)	0
		Voight Creek - TR10.0428	Voights Creek H	6 (5.1%)	0
	Southern Puget Sound (5.1%)	Chambers Creek - 12.0007	Chambers Creek H	1 (0.9%)	0
		Clear Creek - 11.0013C	Clear Creek H	2 (1.7%)	2
Kalama Creek - 11.0017		Kalama Creek H	3 (2.6%)	0	
Columbia River (2.6%)	Central Col R (0.9%)	Spring Creek - 29.0159	Spring Creek NFH	1 (0.9%)	1
	Lower Col R (1.7%)	Fallert Creek - 27.0017	Fallert Creek H	1 (0.9%)	0
		McKenzie River 1	McKenzie Hatchery	1 (0.9%)	0
Total				117	58

Table 2.5 Composition of test fishery Chinook encounters and associated mark-rate and size/mark-status proportion estimates from the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Stat Week	Fishing Effort		Legal		Sublegal		Total
	Days	Hrs Fished	AD	UM	AD	UM	
49	0	0.0	0	0	0	0	0
50	0	0.0	0	0	0	0	0
51	5	23.0	8	2	7	0	17
52	2	10.0	4	0	1	0	5
53	3	16.0	1	2	3	0	6
54/1	0	0.0	0	0	0	0	0
2	0	0.0	0	0	0	0	0
3	5	25.5	7	3	4	1	15
4	4	21.5	13	0	0	0	13
5	5	24.5	19	3	2	0	24
6	3	13.0	12	4	1	0	17
7	5	27.0	9	5	3	1	18
8	2	11.0	5	4	0	0	9
9	3	13.5	4	1	2	3	10
10	4	19.0	3	3	0	1	7
11	4	19.0	4	2	0	0	6
12	3	16.0	3	0	0	0	3
13	5	24.5	3	1	1	0	5
14	5	27.5	5	0	1	0	6
15	4	22.5	1	3	0	2	6
16	2	11.0	0	0	0	1	1
17	5	26.5	5	3	0	0	8
18	1	4.0	2	1	0	0	3
Total	70	355.0	108	37	25	9	179
Size/mark-status composition:			0.60 (0.0013)	0.21 (0.0009)	0.14 (0.0007)	0.05 (0.0003)	
Legal size mark rate:			0.74 (0.0013)				
Overall mark rate:			0.74 (0.0011)				

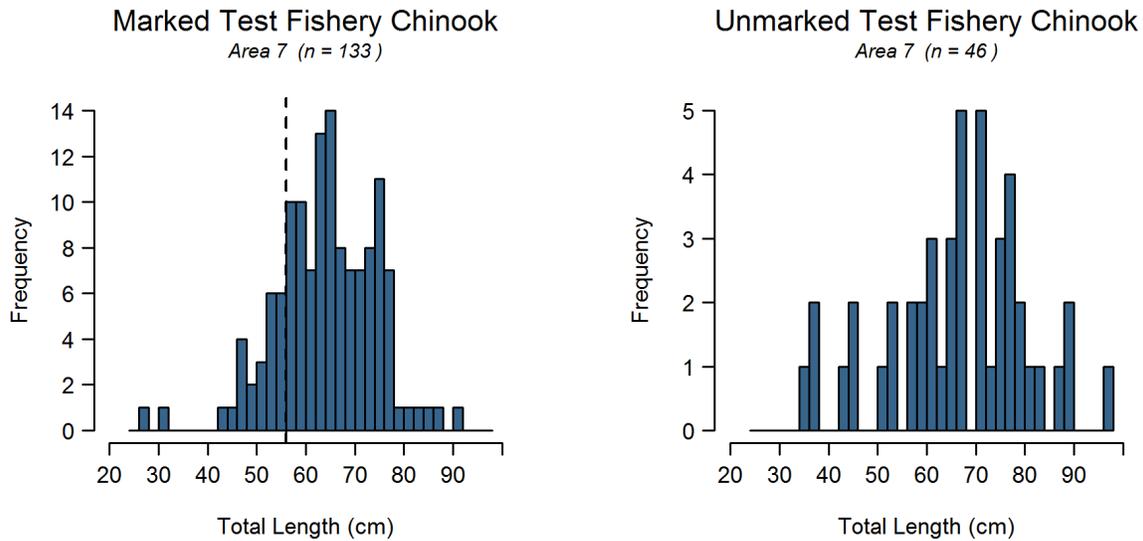


Figure 2.5 Length-frequency distributions of marked (*left panel*) and unmarked (*right panel*) Chinook encountered by test fishers during the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013. The vertical dashed line in the left panel corresponds to the legal size limit (22 in or 56 cm).

Table 2.6 Total Chinook encountered (retained and released) by private-boat anglers logging their trips on VTRs, with estimates of legal-size and overall (legal and sublegal) mark rates during the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private VTR	52 1-trip VTRs, 100 Angler Trips	107	55	37	19	218	0.66	0.66
Size/mark-status composition:		0.49	0.25	0.17	0.09			
Variance:		(0.001)	(0.001)	(0.001)	(0.000)			

We used Pearson’s chi-square test to compare the Chinook size and mark-status composition of the Area 7 test fishery and VTR data. Results suggest no significant difference in composition between the two data sets ($\chi^2 = 5.64$, $df = 3$, $p = 0.130$), indicating that they could be combined. However, given the sufficient sample sizes in the test fishery data (and assuming higher data quality), we elected to use only this data as an estimate of the Chinook size/mark-status proportions needed for estimating total Chinook encounters and associated mortalities in the Area 7 mark-selective fishery.

Table 2.7 Summary of season-wide fishery impact estimates for the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013. Release mortality rate = 0.15 for legal fish and 0.20 for sublegal fish. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	3,988	3,469	518	78	3,547	141,294	376	2810 - 4284	11
Legal UM	1,366	3	1,363	205	207	1,510	39	131 - 283	19
Sublegal AD	923	106	817	163	269	2,016	45	181 - 357	17
Sublegal UM	332	0	332	66	66	527	23	21 - 111	35
Total	6,609	3,578	3,032	512	4,090	145,346	381	3343 - 4837	9

Table 2.8 Comparison of modeled (FRAM model run 1512) and estimated total Chinook encounters for the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	2,685	740	1,945	7
	AD	11,934	3,544	8,390	3,083
	Total	14,619	4,284	10,335	3,090
	% Marked	82	83	81	100
Estimated (Creel) Encounters	UM	1,699	1,366	332	3
	AD	4,911	3,988	923	3,575
	Total	6,609	5,354	1,255	3,578
	% Marked	74	75	74	100

Table 2.9 Comparison of modeled (FRAM model run 1512) and estimated total Chinook mortalities for the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	506	4,984	5,490	274	3,816	4,090
Released Legal	110	223	333	205	78	282
Released Sublegal	389	1,678	2,067	66	163	230
Landed Only	7	3,083	3,090	3	3,575	3,578

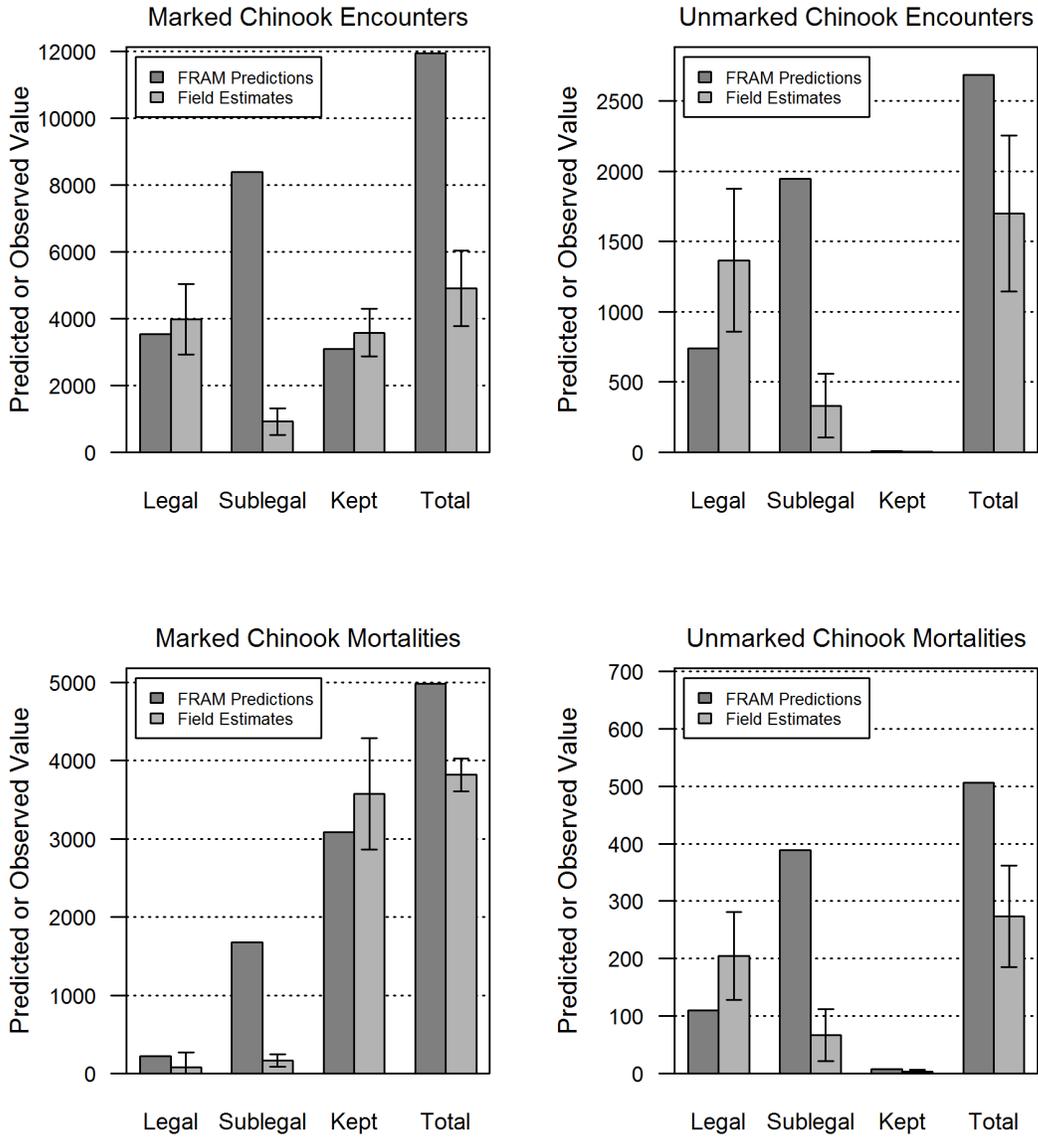


Figure 2.6 Comparison of modeled (FRAM model run 1512) and estimated total Chinook encounters and mortalities for the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013. Error bars represent approximate 95% confidence intervals for field estimates.

Table 2.10 Summary of double-index tagged (DIT) Chinook kept by anglers, and estimated total mortality of unmarked DIT Chinook due to hook-and-release impacts resulting from the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013. AD = marked (adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs'd	AD DIT Harvest		UM DIT Enc.	UM DIT Mortality		
			Est.	var(Est.)		Est.	var(Est.)	SE(Est.)
Clear Creek Hatchery	2009	1	2.2	2.5	2.2	0.2	0.025	0.2
	2010	1	2.2	2.5	2.2	0.2	0.026	0.2
George Adams Hatchery	2009	5	10.8	12.4	10.8	1.1	0.125	0.8
	2010	2	4.3	5.0	4.4	0.4	0.052	0.3
Grovers Creek Hatchery	2009	3	6.5	7.5	6.2	0.6	0.069	0.5
	2010	1	2.2	2.5	2.2	0.2	0.025	0.2
Chilliwack River Hatchery	2010	10	21.5	24.9	10.5	1.1	0.059	0.8
Kendall Creek Hatchery	2009	2	4.3	5.0	4.4	0.4	0.052	0.3
	2010	2	4.3	5.0	4.2	0.4	0.047	0.3
Marblemount Hatchery	2008	3	6.5	7.5	6.4	0.6	0.073	0.5
	2009	7	15.1	17.4	15.1	1.5	0.174	1.1
Samish Hatchery	2009	2	4.3	5.0	4.4	0.4	0.051	0.3
	2010	10	21.5	24.9	22.3	2.2	0.268	1.6
Soos Creek Hatchery	2009	2	4.3	5.0	4.5	0.5	0.055	0.3
Spring Creek NFH	2009	1	2.2	2.5	2.2	0.2	0.025	0.2
Wallace River Hatchery	2009	4	8.6	9.9	8.6	0.9	0.099	0.6
	2010	2	4.3	5.0	4.3	0.4	0.051	0.3
Total		58	124.9	144.2	114.8	11.5	1.273	8.4

Table 2.11 Monthly sample rates (Total retained Chinook sampled¹ / Estimated retained Chinook) in the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013. AD = marked (adipose-clipped), UM = unmarked.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
December	49-53	1 Dec - 30 Dec	846	0	846	388	1	389	46.0%
January	54/1-5	31 Dec - 3 Feb	1,024	0	1,024	383	0	383	37.4%
February	6-9	4 Feb - 3 Mar	739	3	742	392	1	393	53.0%
March	10-13	4 Mar - 31 Mar	840	0	840	467	1	468	55.7%
April	14-18	1 Apr - 30 Apr	126	0	126	28	0	28	22.2%
Season Total			3,575	3	3,578	1,658	3	1,661	46.4%

¹ Number of retained Chinook sampled includes all retained Chinook inspected for CWTs, from all sites sampled during the winter 2012-13 Area 7 Chinook MSF (the four sample-frame sites included in the creel estimates, derby samples, and the fish sampled as part of baseline sampling in Area 7).

Table 2.12 Summary of aerial survey and dockside data used to estimate the fraction of Area 7 effort captured in the four-site sample frame during the Area 7 Chinook MSF from December 1, 2012 - April 30, 2013. See Methods Report (WDFW 2012a) for computational details and notation.

Survey Date	Stratum	Aerial Survey Details			Dockside Sampling Details			Sample Fraction, f_{ij}
		Start Time	End Time	Total Boats, m_{ij}	Sampled Boats	Active Boats, X_{ij}	Total Boats, Sy_{ijk}	
5-Dec	Weekday	11:44	13:00	32	9	7	41	0.219
22-Dec	Weekend	11:40	12:43	20	19	15	25	0.750
28-Dec	Weekend	11:38	12:54	51	36	29	63	0.569
5-Jan	Weekend	11:27	13:02	46	38	31	56	0.674
10-Feb	Weekend	13:48	14:56	76	85	55	117	0.724
19-Feb	Weekday	12:08	13:10	16	22	8	44	0.500
27-Feb	Weekday	11:55	13:00	20	20	15	27	0.750
2-Mar	Weekend	10:58	11:56	28	17	14	34	0.500
8-Mar	Weekend	12:25	13:31	71	51	29	125	0.408
9-Mar	Weekend	13:11	14:15	117	114	86	155	0.735
15-Mar	Weekend	11:36	12:37	53	36	25	76	0.472
17-Mar	Weekend	12:02	13:10	17	32	15	36	0.882
22-Mar	Weekend	12:18	13:30	32	25	12	67	0.375
24-Mar	Weekend	11:46	12:50	74	73	53	102	0.716
6-Apr	Weekend	11:29	12:27	21	24	7	72	0.333
9-Apr	Weekday	10:51	11:50	26	19	6	82	0.231
Totals:				700	620	407	1,124	
Mean:				44	39	25	70	0.552
St Dev:				28.5	28.7	22.1	38.1	0.203
CV(%):				65.1%	74.1%	87.1%	54.2%	36.8%

Table 2.13 Season-total estimates of Chinook encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Area 7 Chinook MSF. Values may not add exactly due to rounding error.

Area	Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
			LM	LU	SM	SU	LM	LU	SM	SU	
7	Feb 1 - Feb 29, 2008	4,862	1,301	2	24	0	200	1,042	244	155	2,967
7	Feb 1 - Apr 15, 2009	8,167	1,406	9	14	0	210	708	139	17	2,501
7	Dec 1, 2009 - Apr 30, 2010	9,589	1,400	0	18	0	209	673	150	74	2,524
7	Dec 1, 2010 - Apr 30, 2011	11,814	2,368	4	10	0	354	1,988	521	531	5,776
7	Dec 1, 2011 - Apr 30, 2012	10,536	2,359	0	54	0	353	1,446	1,935	678	6,825
7	Dec 1, 2012 - Apr 30, 2013	10,322	3,469	3	106	0	518	1,363	817	332	6,609

3) Marine Areas 8-1 & 8-2 Winter Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented an eighth consecutive winter Chinook MSF in Marine Areas 8-1 and 8-2 from November 1, 2012 through April 30, 2013. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program in Areas 8-1 and 8-2 during the November-April season in order to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included dockside creel sampling, on-the-water effort surveys, and collection of VTRs from the angling public. **Table 3.1** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). In the following section we present results from our monitoring activities during the Areas 8-1 and 8-2 winter Chinook MSF from November 1, 2012 through April 30, 2013.

Table 3.1 Sampling/estimation details on target parameters associated with the overall Areas 8-1 and 8-2 Chinook MSF monitoring program.

Activity	Focal Parameter(s)	Secondary Parameter(s)	Sample Unit(s)	Finest Estimation Time Step	Comments
Dockside Creel Sampling	Fishing effort (boat & angler trips); kept and released fish	Catch rates (CPUE); length, age, and CWT composition of harvest ¹ ; collection of angler fishing methods.	Angler trip; kept fish; reported fish release	Two weeks	Creel estimates were produced for two-week estimation periods and stratified into “weekday” (Mon.-Thurs.) and “weekend” (Fri.-Sun.) day-type strata within weeks. For the weekday stratum we sampled $n=2$ days out of $N=8$ available weekdays per two-week period. For the weekend stratum we sampled $n=2$ days out of $N=3$ available weekend days per week.
On-the-water Surveys	Proportion of total angler effort that uses sample-frame sites (i.e., “size measures” or “weights” of sampled sites) versus out-of-frame sites.	Total on-water boat and angler counts at assumed peak effort time interval (instantaneous count); spatial distribution of fishing boats in the area.	Boats and anglers.	Month	A total of 4 boat surveys were conducted during the six-month fishery. The results of these surveys were incorporated into multi-year site-weight averages.
Voluntary Trip Reports (VTRs)	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Encounter data for non-Chinook species (e.g., Coho) that the angler may record on the VTR form	Fish encounter	Season (6 months)	We combined the Areas 8-1 and 8-2 VTR data to estimate the size/mark-status proportions (LM = 14%, LU = 4%, SM = 45%, SU = 37%; Table 3.6) needed to produce encounter and mortality estimates.
Overall Fishery Impacts Estimation	Total Chinook encounters and mortalities, by size/mark-status group	Ratios of encounters and mortalities per kept Chinook	N/A	Season (6 months)	Estimated on a monthly time step but considered at the season-total level.
Coded-wire Tag (CWT) Impacts Estimation	Marked/unmarked double-index tag (DIT) encounters and mortalities	N/A	N/A	Season (6 months)	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

¹The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.

Table 3.2 Estimates of total fishing effort and total salmon catch (harvest and releases) during the Area 8-1 Chinook MSF from November 1, 2012 - April 30, 2013. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
Nov	45	01-Nov	04-Nov	55	116	54	0	192	170	416
	46	05-Nov	11-Nov	88	153	36	0	129	114	279
	47	12-Nov	18-Nov	4	7	0	0	0	0	0
	48	19-Nov	25-Nov	131	277	70	0	246	217	532
Dec	49	26-Nov	02-Dec	44	83	7	0	25	22	53
	50	03-Dec	09-Dec	51	100	10	0	36	32	78
	51	10-Dec	16-Dec	36	80	0	0	0	0	0
	52	17-Dec	23-Dec	47	95	11	0	37	33	81
	53	24-Dec	30-Dec	67	110	12	0	41	36	89
Jan	54/1	31-Dec	06-Jan	63	106	0	0	0	0	0
	2	07-Jan	13-Jan	13	20	0	0	0	0	0
	3	14-Jan	20-Jan	39	68	22	0	79	70	171
	4	21-Jan	27-Jan	2	2	0	0	0	0	0
	5	28-Jan	03-Feb	29	52	0	0	0	0	0
Feb	6	04-Feb	10-Feb	37	65	0	0	0	0	0
	7	11-Feb	17-Feb	61	119	3	0	12	10	26
	8	18-Feb	24-Feb	23	35	2	0	9	8	18
	9	25-Feb	03-Mar	99	198	27	0	96	85	207
Mar	10	04-Mar	10-Mar	41	77	10	0	36	32	78
	11	11-Mar	17-Mar	16	23	3	0	11	10	24
	12	18-Mar	24-Mar	24	43	0	0	0	0	0
	13	25-Mar	31-Mar	23	37	0	0	0	0	0
Apr	14	01-Apr	07-Apr	9	21	0	0	0	0	0
	15	08-Apr	14-Apr	11	23	7	0	24	22	53
	16	15-Apr	21-Apr	48	97	7	0	24	22	53
	17	22-Apr	28-Apr	19	39	0	0	0	0	0
	18	29-Apr	30-Apr	0	0	0	0	0	0	0
Area 8-1 Season Total:				1,081	2,046	282	0	996	881	2,158
Variance:				20,598	78,350	2,551	0	195,724	122,560	734,665
SE:				144	280	51	0	442	350	857
CV (%):				13.3%	13.7%	17.9%	-	44.4%	39.7%	39.7%
95% CI:				799-1,362	1,497-2,594	183-381	-	128-1,863	195-1,567	478-3,838

Table 3.3 Estimates of total fishing effort and total salmon catch (harvest and releases) during the Area 8-2 Chinook MSF from November 1, 2012 - April 30, 2013. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
Nov	45	01-Nov	04-Nov	160	331	33	0	117	103	253
	46	05-Nov	11-Nov	178	334	28	0	99	87	214
	47	12-Nov	18-Nov	28	48	2	0	8	7	17
	48	19-Nov	25-Nov	77	155	20	0	71	63	154
Dec	49	26-Nov	02-Dec	33	63	0	0	0	0	0
	50	03-Dec	09-Dec	59	118	9	0	32	29	70
	51	10-Dec	16-Dec	29	43	8	0	28	25	60
	52	17-Dec	23-Dec	37	53	7	0	24	21	52
	53	24-Dec	30-Dec	165	307	26	0	90	80	196
Jan	54/1	31-Dec	06-Jan	130	244	26	0	93	82	201
	2	07-Jan	13-Jan	64	122	18	0	63	56	136
	3	14-Jan	20-Jan	83	143	9	0	31	27	66
	4	21-Jan	27-Jan	23	44	6	0	23	20	50
	5	28-Jan	03-Feb	49	89	3	0	12	10	26
Feb	6	04-Feb	10-Feb	86	153	7	0	24	21	51
	7	11-Feb	17-Feb	134	240	13	0	47	42	103
	8	18-Feb	24-Feb	66	105	17	0	59	52	128
	9	25-Feb	03-Mar	123	213	13	0	47	42	102
Mar	10	04-Mar	10-Mar	136	252	12	0	42	37	91
	11	11-Mar	17-Mar	54	85	15	0	53	47	115
	12	18-Mar	24-Mar	93	171	11	0	38	34	83
	13	25-Mar	31-Mar	154	267	9	0	31	28	68
Apr	14	01-Apr	07-Apr	49	94	19	0	66	58	143
	15	08-Apr	14-Apr	79	154	30	0	105	93	228
	16	15-Apr	21-Apr	118	216	14	0	51	45	111
	17	22-Apr	28-Apr	124	219	8	0	29	25	62
	18	29-Apr	30-Apr	0	0	0	0	0	0	0
Area 8-2 Season Total:				2,332	4,260	362	0	1,283	1,135	2,780
Variance:				47,428	164,739	2,992	0	307,799	193,713	1,145,283
SE:				218	406	55	0	555	440	1,070
CV (%):				9.3%	9.5%	15.1%	-	43.2%	38.8%	38.5%
95% CI:				1,906-2,759	3,465-5,056	255-470	-	196-2,371	272-1,998	683-4,878

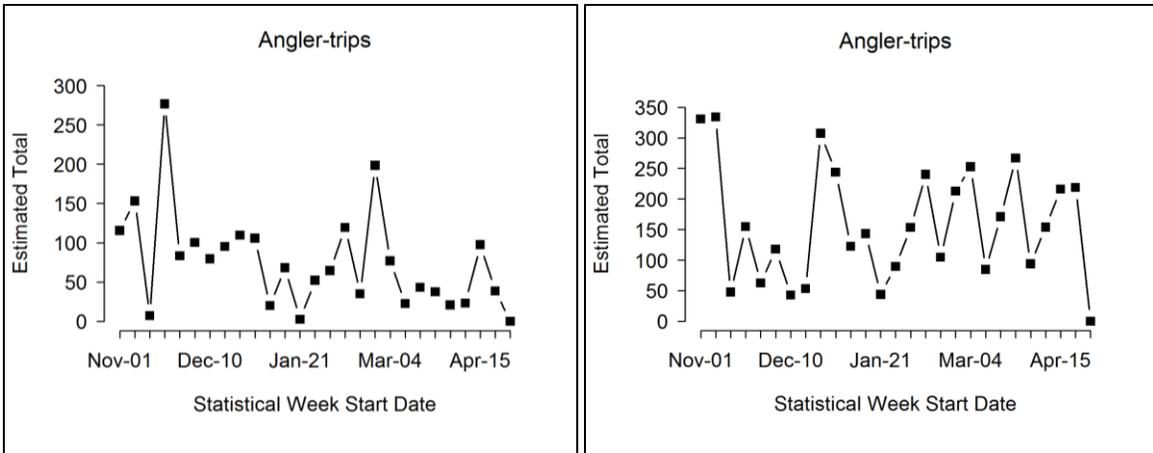


Figure 3.1 Temporal patterns in fishing effort during the Area 8-1 (*left panel*) and 8-2 (*right panel*) Chinook MSFs from November 1, 2012 - April 30, 2013.

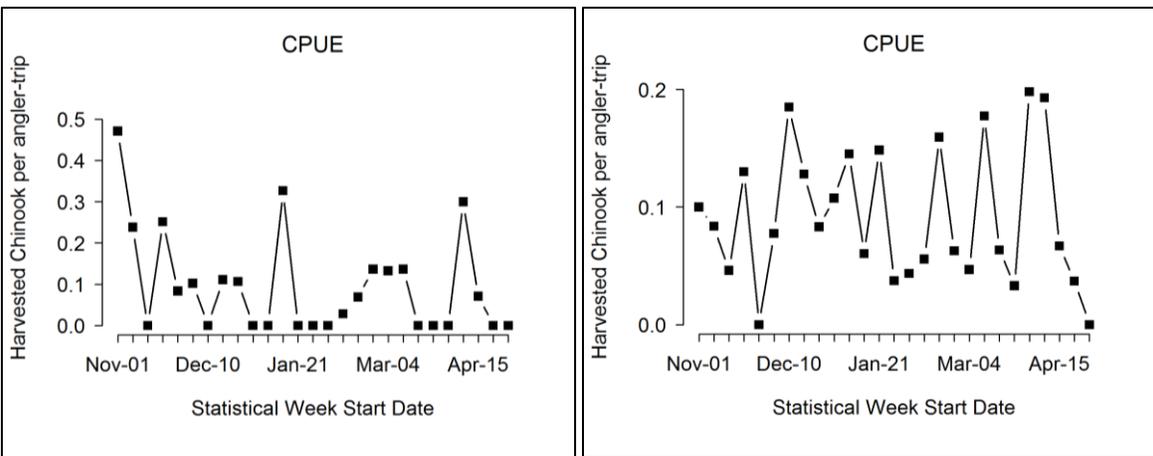


Figure 3.2 Temporal patterns in CPUE (number of Chinook landed per angler trip) during the Area 8-1 (*left panel*) and 8-2 (*right panel*) Chinook MSFs from November 1, 2012 - April 30, 2013.

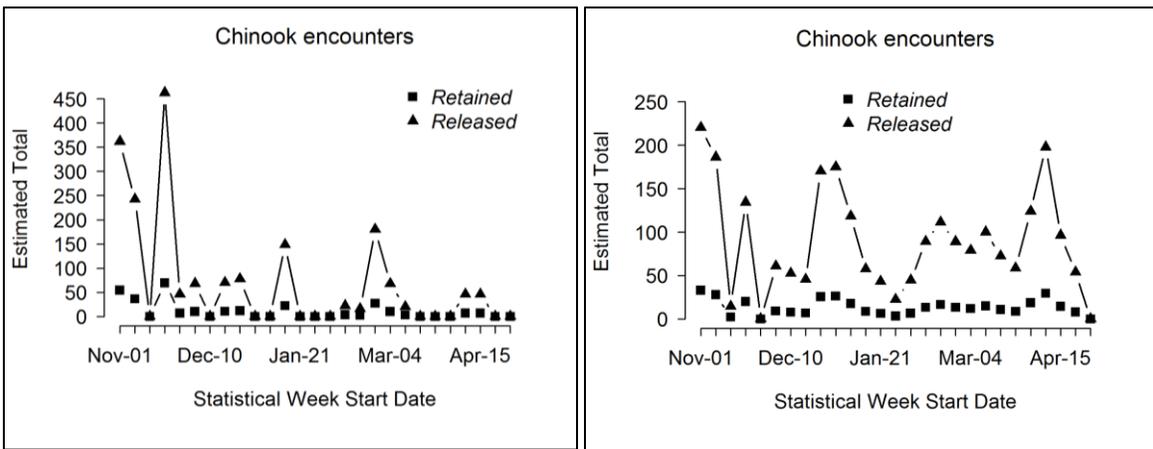


Figure 3.3 Temporal patterns in Chinook encounters (number retained and released) during the Area 8-1 (*left panel*) and 8-2 (*right panel*) Chinook MSFs from November 1, 2012 - April 30, 2013.

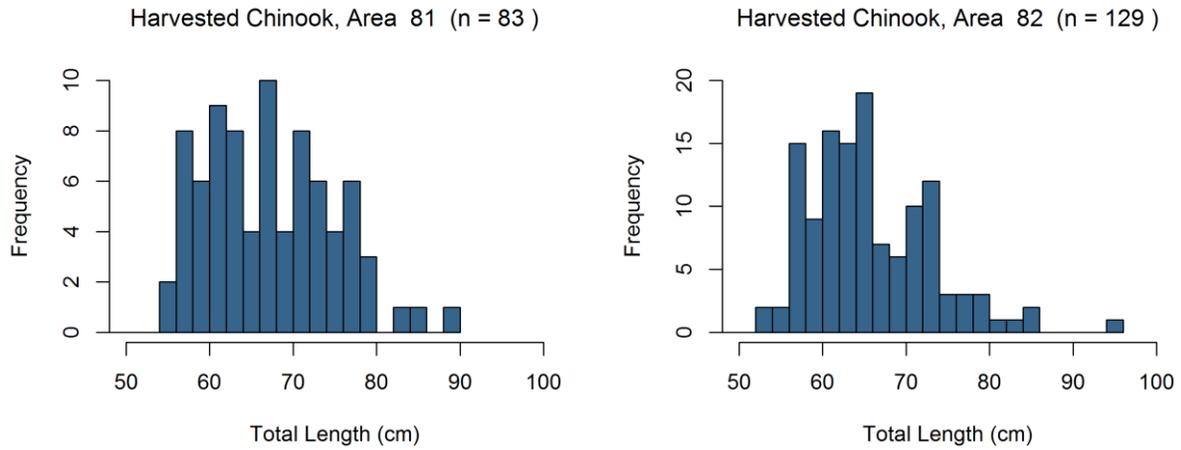


Figure 3.4 Length-frequency distributions of retained marked Chinook sampled in dockside angler interviews during the Area 8-1 (*left panel*) and 8-2 (*right panel*) Chinook MSFs from November 1, 2012 - April 30, 2013.

Table 3.4 Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the Area 8-1 (*upper panel*) and 8-2 (*lower panel*) Chinook MSFs from November 1, 2012 - April 30, 2013.

Area 8-1

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	79	4	83
Unmarked	0	0	0
Total	79	4	83

Area 8-2

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	123	6	129
Unmarked	0	0	0
Total	123	6	129

Table 3.5 Summary of CWTs recovered from Chinook salmon harvested during the Area 8-1 and 8-2 Chinook MSFs from November 1, 2012 - April 30, 2013. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	Number DITs
British Columbia (12.5%)	Fraser River – Thompson River (12.5%)	Chilliwack River	Chilliwack River H	1 (12.5%)	1
Washington (75%)	Hood Canal (12.5%)	Purdy Creek - 16.0005	George Adams H	1 (12.5%)	1
	Skagit River (12.5%)	Cascade River - 03.1411	Marblemount	1 (12.5%)	0
	Mid Puget Sound (37.5%)	Gorst Creek - 15.0216	Gorst Rearing Pond	2 (25%)	0
		Voight Creek Tr 10.0428	Voights Creek H	1 (12.5%)	0
Southern Puget Sound (12.5%)	Kalama Creek - 11.0017	Kalama Creek H	1 (12.5%)	0	
Columbia River (12.5%)	Lower Columbia River (12.5%)	Cowlitz River - 26.0002	Cowlitz Salmon H	1 (12.5%)	0
Total				8	2

Table 3.6 Total Chinook encountered (retained and released) by private-boat anglers logging their trips on VTRs during the Area 8-1 and 8-2 Chinook MSFs from November 1, 2012 - April 30, 2013, with estimates of legal-size and overall (legal and sublegal) mark rates. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private VTR Area 8-1	4 1-trip VTRs, 9 Angler Trips	5	0	0	8	13	0.38	1.00
Private VTR Area 8-2	15 1-trip VTRs, 24 Angler Trips	2	2	22	10	36	0.67	0.50
VTR Total	19 1-trip VTRs, 33 Angler Trips	7	2	22	18	49	0.59	0.78
Combined size/mark-status composition:		0.14	0.04	0.45	0.37			
Variance:		(0.0026)	(0.0008)	(0.0052)	(0.0048)			

Due to small sample sizes, we used the Freeman and Halton extension of the Fisher exact test to compare the Chinook size and mark-status composition of the Area 8-1 and 8-2 VTR data. Results suggested a significant difference in composition between the two data sets ($p < 0.001$). However, due to the small sample sizes in each area and their close proximity to each other, we elected to combine the two VTR data sets to provide a single estimate of Chinook size/mark-status proportions. This combined set of proportions was used to estimate total Chinook encounters and associated mortalities for the mark-selective fisheries in Area 8-1 and 8-2 combined.

Table 3.7 Summary of season-wide fishery impact estimates for the Area 8-1 (*upper panel*) and 8-2 (*lower panel*) Chinook MSFs from November 1, 2012 - April 30, 2013. Release mortality rate = 0.15 for legal fish and 0.20 for sublegal fish. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Area 8-1

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	308	268	40	6	274	2,969	54	167 - 381	20
Legal UM	88	0	88	13	13	100	10	0 - 33	76
Sublegal AD	969	14	955	191	205	6,784	82	43 - 366	40
Sublegal UM	793	0	793	159	159	4,725	69	24 - 293	43
Total	2,158	282	1,876	369	651	14,578	121	414 - 887	19

Area 8-2

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	397	346	52	8	353	3,730	61	234 - 473	17
Legal UM	113	0	113	17	17	164	13	0 - 43	75
Sublegal AD	1,248	17	1,231	246	263	10,645	103	61 - 465	39
Sublegal UM	1,021	0	1,021	204	204	7,457	86	35 - 374	42
Total	2,780	362	2,418	475	838	21,997	148	547 - 1128	18

Table 3.8 Comparison of modeled (FRAM model run 1512) and estimated total Chinook encounters for the combined Area 8-1 and 8-2 Chinook MSFs from November 1, 2012 - April 30, 2013. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	5,044	444	4,600	36
	AD	13,754	2,319	11,435	2,018
	Total	18,798	2,763	16,035	2,054
	% Marked	73	84	71	98
Estimated (Creel) Encounters	UM	2,016	202	1,814	0
	AD	2,923	706	2,217	644
	Total	4,939	907	4,032	644
	% Marked	59	78	55	100

Table 3.9 Comparison of modeled (FRAM model run 1512) and estimated total Chinook mortalities for the combined Area 8-1 and 8-2 Chinook MSFs from November 1, 2012 - April 30, 2013. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	1,019	4,451	5,470	393	1,095	1,488
Released Legal	63	146	209	30	14	44
Released Sublegal	920	2,287	3,207	363	437	800
Landed Only	36	2,018	2,054	0	644	644

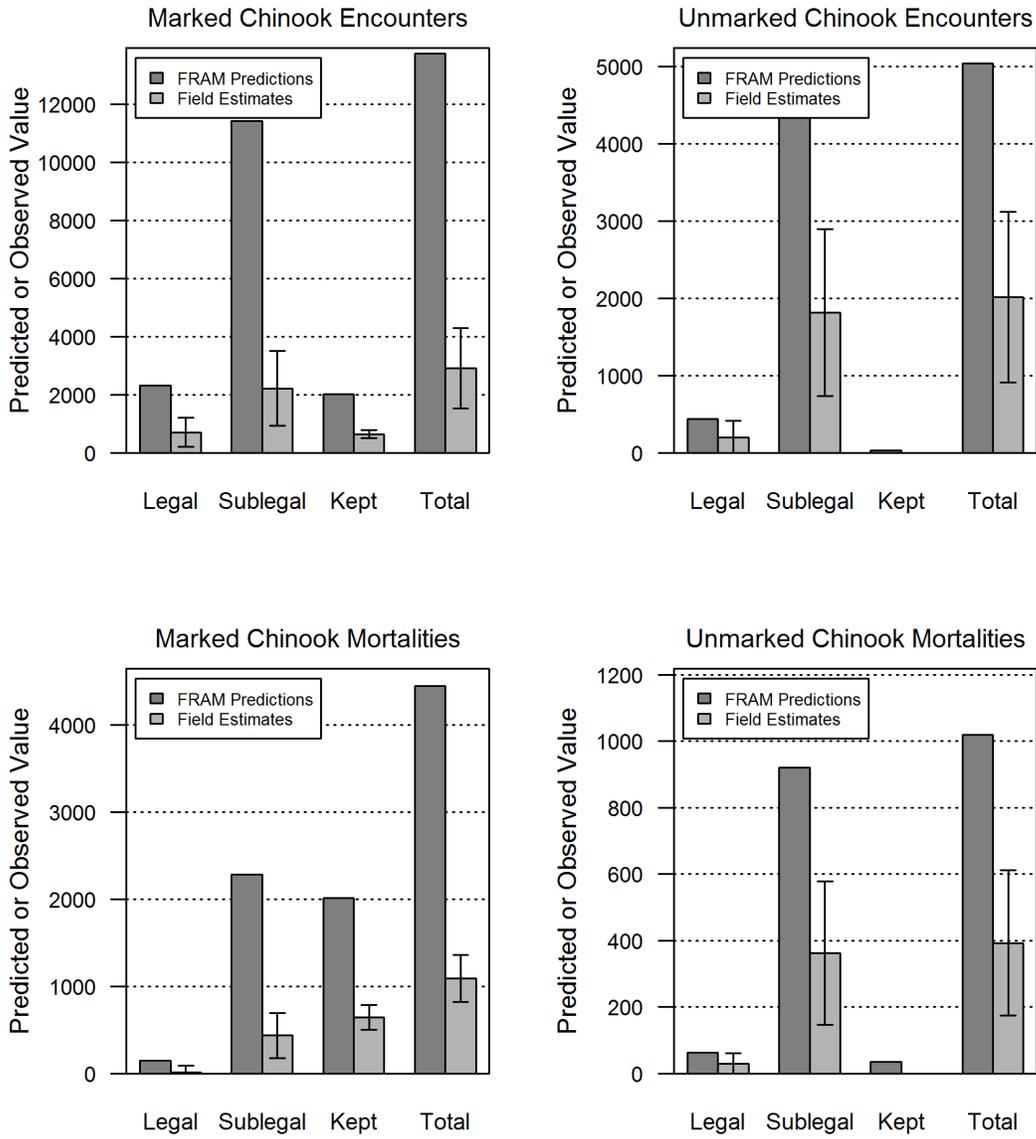


Figure 3.5 Comparison of modeled (FRAM model run 1512) and estimated total Chinook encounters and mortalities for the combined Area 8-1 and 8-2 Chinook MSFs from November 1, 2012 - April 30, 2013. Error bars represent approximate 95% confidence intervals for field estimates.

Table 3.10 Summary of double-index tagged (DIT) Chinook kept by anglers, and estimated total mortality of unmarked DIT Chinook due to hook-and-release impacts resulting from the combined Area 8-1 and 8-2 Chinook MSFs from November 1, 2012 - April 30, 2013. AD = marked (adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs'd	AD DIT Harvest		UM DIT Enc.	UM DIT Mortality		
			Est.	var(Est.)		Est.	var(Est.)	SE(Est.)
George Adams Hatchery	2010	1	3.4	8.1	3.5	0.3	0.084	0.3
Chilliwack River Hatchery	2010	1	3.4	8.1	1.7	0.2	0.019	0.1
Total		2	6.8	16.3	5.1	0.5	0.104	0.4

Table 3.11 Monthly sample rates (Total retained Chinook sampled¹ / Estimated retained Chinook) in the Area 8-1 (*upper panel*) and 8-2 (*lower panel*) Chinook MSFs from November 1, 2012 - April 30, 2013.

Area 8-1

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
November	45-48	1 Nov - 25 Nov	160	0	160	47	0	47	29.3%
December	49-53	26 Nov - 30 Dec	39	0	39	6	0	6	15.2%
January	54/1-5	31 Dec - 3 Feb	22	0	22	7	0	7	31.4%
February	6-9	4 Feb - 3 Mar	33	0	33	10	0	10	30.4%
March	10-13	4 Mar - 31 Mar	13	0	13	4	0	4	30.2%
April	14-18	1 Apr - 30 Apr	14	0	14	9	0	9	65.2%
Season Total			282	0	282	83	0	83	29.5%

Area 8-2

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
November	45-48	1 Nov - 25 Nov	83	0	83	33	0	33	39.6%
December	49-53	26 Nov - 30 Dec	49	0	49	27	0	27	54.7%
January	54/1-5	31 Dec - 3 Feb	62	0	62	14	0	14	22.4%
February	6-9	4 Feb - 3 Mar	50	0	50	9	0	9	18.0%
March	10-13	4 Mar - 31 Mar	46	0	46	21	0	21	45.2%
April	14-18	1 Apr - 30 Apr	71	0	71	25	0	25	35.3%
Season Total			362	0	362	129	0	129	35.6%

¹ Number of retained Chinook sampled includes all retained Chinook inspected for CWTs, from all sites sampled during the winter 2012-13 Area 8-1 and 8-2 Chinook MSFs (the sample-frame sites included in the creel estimates and the fish sampled as part of baseline sampling in the Area).

Table 3.12 Fishery-total estimates of retained and released salmon (other than Chinook salmon) for the Areas 8-1 and 8-2 Chinook MSF from November 1, 2012 - April 30, 2013. AD = marked (adipose-clipped), UM = Unmarked, UK = unknown mark-status. Values may not add exactly due to rounding error.

Week	Start Date	End Date	AREA 8-1		AREA 8-2						
			Released Salmon		Retained Salmon		Released Salmon				
			Coho UK	Cutthroat	Coho UM	Coho UK	Coho AD	Coho UM	Coho UK	Dolly Varden	Unk Salmon
45	01-Nov	04-Nov	0	0	2	0	7	0	13	0	79
46	05-Nov	11-Nov	11	0	0	0	0	9	5	0	28
47	12-Nov	18-Nov	0	0	0	3	0	0	0	0	2
48	19-Nov	25-Nov	0	0	0	3	0	0	0	0	16
49	26-Nov	02-Dec	0	0	0	0	0	0	0	0	0
50	03-Dec	09-Dec	0	0	0	0	11	5	0	0	0
51	10-Dec	16-Dec	0	0	0	0	0	0	0	0	0
52	17-Dec	23-Dec	0	0	0	0	2	0	0	0	0
53	24-Dec	30-Dec	0	0	0	0	0	0	0	0	9
54/1	31-Dec	06-Jan	0	0	0	0	0	0	4	0	9
2	07-Jan	13-Jan	0	0	0	0	0	0	0	0	6
3	14-Jan	20-Jan	0	0	0	0	0	0	0	0	6
4	21-Jan	27-Jan	0	0	0	0	0	0	0	0	0
5	28-Jan	03-Feb	0	0	0	0	0	0	0	0	0
6	04-Feb	10-Feb	0	0	0	0	0	0	0	0	19
7	11-Feb	17-Feb	0	0	0	0	0	0	0	0	0
8	18-Feb	24-Feb	0	0	0	0	0	0	0	0	0
9	25-Feb	03-Mar	0	0	0	0	0	0	0	0	0
10	04-Mar	10-Mar	0	0	0	0	4	0	0	0	0
11	11-Mar	17-Mar	0	7	0	0	0	0	0	0	0
12	18-Mar	24-Mar	0	0	0	0	0	0	0	6	0
13	25-Mar	31-Mar	0	0	0	0	0	0	0	6	7
14	01-Apr	07-Apr	0	0	0	0	0	0	0	0	0
15	08-Apr	14-Apr	0	0	0	0	0	0	0	0	0
16	15-Apr	21-Apr	0	0	0	0	0	0	0	0	0
17	22-Apr	28-Apr	0	0	0	0	0	0	0	0	0
18	29-Apr	30-Apr	0	0	0	0	0	0	0	0	0
Season Total:			11	7	2	6	25	14	23	12	182
Variance:			82	33	3	27	123	52	84	109	1,048
Standard Error:			9	6	2	5	11	7	9	10	32
CV (%):			81%	81%	67%	88%	45%	51%	41%	89%	18%
95% CI:			0-29	0-18	0-6	0-16	3-47	0-28	5-41	0-32	119-245

Table 3.13 Summary of the total number of anglers intercepted in Areas 8-1 and 8-2 during on-the-water surveys conducted from November 1, 2012 - April 30, 2013. Sites in bold represent those included in the dockside sample frame.

Area	Site Name	Total Anglers	Season Total (unadjusted) Size Measure
8-1	Camano Island State Park Ramp	12	0.364
8-1	Coronet Bay Ramp	1	0.030
8-1	Coupeville Ramp	4	0.121
8-1	Maple Grove Ramp	2	0.061
8-1	Oak Harbor Marina/Ramp	10	0.303
8-1	Private	4	0.121
Area 8-1 Total Anglers		33	1.00
8-2	Bayside Marina/Drystack	1	0.011
8-2	Camano Isl. State Park	8	0.090
8-2	Coupeville Ramp	1	0.011
8-2	Dagmar's Landing	2	0.022
8-2	Edmonds Dry Storage	1	0.011
8-2	Edmonds Marina	2	0.022
8-2	Everett Marina	17	0.191
8-2	Everett Ramp	51	0.573
8-2	Kayak State Park Ramp	3	0.034
8-2	Langley Marina/Ramp	1	0.011
8-2	Marysville Public Ramp	2	0.022
Area 8-2 Total Anglers		89	1.00

Table 3.14 Season-total estimates of Chinook encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Area 8-1 and 8-2 Chinook MSFs. Values may not add exactly due to rounding error.

Area	Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
			LM	LU	SM	SU	LM	LU	SM	SU	
8-1	Oct 1, 2005 - Apr 30, 2006	3,976	303	0	39	0	45	188	763	575	1,914
8-1	Oct 1, 2006 - Apr 30, 2007	3,454	278	8	37	4	42	118	1,437	857	2,781
8-1	Nov 1, 2007 - Apr 30, 2008	3,288	638	5	36	0	95	304	1,345	577	3,000
8-1	Jan 1, 2009 - Apr 30, 2009	2,518	396	12	7	0	59	45	1,443	909	2,870
8-1	Nov 1, 2009 - Apr 30, 2010	3,192	273	0	11	0	41	45	595	269	1,234
8-1	Nov 1, 2010 - Apr 30, 2011	2,398	87	0	9	0	13	15	91	69	283
8-1	Nov 1, 2011 - Apr 30, 2012	2,767	284	0	7	0	42	136	1,027	272	1,768
8-1	Nov 1, 2012 - Apr 30, 2013	2,046	268	0	14	0	40	88	955	793	2,158
8-2	Oct 1, 2005 - Apr 30, 2006	8,521	735	40	35	0	106	618	1,706	876	4,116
8-2	Oct 1, 2006 - Apr 30, 2007	7,848	766	18	95	3	113	183	10,486	5,407	17,071
8-2	Nov 1, 2007 - Apr 30, 2008	5,678	795	15	74	3	114	181	942	303	2,428
8-2	Jan 1, 2009 - Apr 30, 2009	5,946	495	15	14	0	74	18	1,557	468	2,641
8-2	Nov 1, 2009 - Apr 30, 2010	6,732	814	4	10	0	122	164	1,300	487	2,902
8-2	Nov 1, 2010 - Apr 30, 2011	3,505	111	0	5	0	17	20	122	88	363
8-2	Nov 1, 2011 - Apr 30, 2012	5,197	470	2	27	0	70	223	1,683	450	2,925
8-2	Nov 1, 2012 - Apr 30, 2013	4,260	346	0	17	0	52	113	1,231	1,021	2,780

4) Marine Area 9 Winter Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a sixth consecutive winter Chinook MSF in Marine Area 9 from November 1-30, 2012 and January 16– April 15, 2013. WDFW’s Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program in Area 9 throughout the season in order to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included dockside creel sampling, aerial effort surveys, test fishing and collection of VTRs from the angling public. **Table 4.1** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). In the following section we present results from our monitoring activities during the Area 9 winter Chinook MSF from November 1-30, 2012 and January 16-April 30, 2013. In addition to the major components of the results described previously (page 3), we present the aerial survey and dockside data used to estimate the sample fraction in Area 9 (see WDFW 2012a, *Aerial-Access Design*). The four sites included in the Area 9 dockside sample frame are Port Townsend Ramp, Kingston Ramp, Everett Ramp and Edmonds Ramp, which are assumed to be the highest-use access sites for Area 9 anglers. The Olympic Peninsula Derby took place from February 16-18 over portions of Marine Areas 6, 7 and 9. The proportions of effort and catch that occurred in each area were estimated based on dockside sampling efforts at designated weigh-in stations during the derby. These proportions were applied to total reported effort and catch in order to allocate them by area. Beginning on March 6, 2013, the daily limit of marked Chinook was reduced to one fish (from two) per angler due to higher than projected legal encounters.

Table 4.1 Sampling/estimation details on target parameters associated with the overall Area 9 winter Chinook MSF monitoring program.

Activity	Focal Parameter(s)	Secondary Parameter(s)	Sample Unit(s)	Finest Estimation Time Step	Comments
Dockside Creel Sampling	Fishing effort (boat & angler trips); kept and released fish	Catch rates (CPUE); length, age, and CWT composition of harvest ¹ ; collection of angler fishing methods.	Angler trip; kept fish; reported fish release	Two weeks	Creel estimates were produced for two-week estimation periods and stratified into “weekday” (Mon.-Thurs.) and “weekend” (Fri.-Sun.) day-type strata within weeks. For the weekday stratum we sampled $n=2$ days out of $N=8$ available weekdays per two-week period. For the weekend stratum we sampled $n=2$ days out of $N=3$ available weekend days per week.
Aerial Surveys	Fraction of Area 9 effort (boats) captured in the four-site sample frame via creel surveys (Sample Fraction, f_{ij}).	Total boat counts at assumed peak effort time interval (instantaneous count); spatial distribution of fishing boats in the area.	Boats	Month	The sample fraction was calculated for individual aerial survey dates (see Table 4.12 ; $n=16$ surveys conducted out of $N=120$ days available in the season). Mean sample fractions were calculated for each time stratum (Nov & Jan-Apr) and used to calculate estimates of Chinook encounters and mortality.
Test Fishing	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Chinook length, age, and DNA-based ² stock composition; species composition of non-Chinook encounters	Fish encounter	Season	Although there were no significant differences in size/mark-status composition between the Nov. and Jan.-Apr. test fishery data, we calculated encounter and mortality estimates separately for each time stratum due to differences in the aerial sample fraction between the two strata. We used proportions of LM=29%, LU=9%, SM=45% and SU=17% for the Nov. stratum and LM=30%, LU=7%, SM=46% and SU=18% for the Jan.-Apr. stratum (see Table 4.5).
Voluntary Trip Reports (VTRs)	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Encounter data for non-Chinook species (e.g., Coho) that the angler may record on the VTR form	Fish encounter	Season	VTR data (Table 4.6) were not used for impact estimation steps due to the assumed higher data quality and sufficient sample size of the test fishery data. See comment in row above.
Overall Fishery Impacts Estimation	Total Chinook encounters and mortalities, by size/mark-status group	Ratios of encounters and mortalities per kept Chinook	N/A	Season	Estimated on a monthly time step but considered at the season-total level.
Coded-wire tag (CWT) Impacts Estimation	Marked/unmarked double-index tag (DIT) encounters and mortalities	N/A	N/A	Season	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

¹ The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.² Though samples were collected, DNA-based estimates of stock composition are not yet available for this fishery.

Table 4.2 Estimates of total fishing effort and total salmon catch (harvest and releases) during the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Month	Stat Week	Start Date	End Date	Estimated Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
Nov	45	1-Nov	4-Nov	211	397	123	0	218	118	458
	46	5-Nov	11-Nov	372	687	248	0	440	237	925
	47	12-Nov	18-Nov	62	88	14	0	25	14	53
	48	19-Nov	25-Nov	406	839	243	5	432	228	908
	49	26-Nov	30-Nov	165	320	89	1	159	84	334
November Total:				1,216	2,331	718	6	1,274	681	2,678
Variance:				9,033	32,595	6,866	14	139,560	31,134	320,621
Standard Error:				95	181	83	4	374	176	566
CV (%):				7.8%	7.7%	11.5%	63.2%	29.3%	25.9%	21.1%
95% CI:				1,029-1,402	1,977-2,685	556-881	0-13	541-2,006	335-1,027	1,569-3,788
Jan - Apr	3	16-Jan	20-Jan	294	582	190	12	365	171	737
	4	21-Jan	27-Jan	211	386	156	0	300	150	606
	5	28-Jan	3-Feb	179	326	95	0	182	91	369
	6	4-Feb	10-Feb	211	372	58	0	112	56	226
	7	11-Feb	17-Feb	208	384	14	0	26	13	54
	8	18-Feb	24-Feb	60	106	9	0	18	9	36
	9	25-Feb	3-Mar	67	109	5	0	9	4	18
	10	4-Mar	10-Mar	173	320	23	0	44	22	89
	11	11-Mar	17-Mar	46	70	15	0	29	15	59
	12	18-Mar	24-Mar	110	194	11	0	21	11	43
	13	25-Mar	31-Mar	262	491	42	0	81	40	163
	14	1-Apr	7-Apr	119	230	28	0	53	27	107
	15	8-Apr	14-Apr	80	129	49	0	94	47	190
16	15-Apr	15-Apr	6	9	3	0	6	3	12	
Olympic Peninsula Derby; 2/16-2/18				328	762	119	0	228	115	462
January - April Total:				2,355	4,470	817	12	1,568	774	3,171
Variance:				72,429	278,620	44,728	95	334,888	47,155	867,322
Standard Error:				269	528	211	10	579	217	931
CV (%):				11.4%	11.8%	25.9%	79.8%	36.9%	28.0%	29.4%
95% CI:				1,828-2,883	3,435-5,504	402-1,231	0-31	434-2,702	349-1,200	1,346-4,996
Area 9 Season Total:				3,571	6,801	1,535	18	2,842	1,455	5,849
Variance:				81,462	311,215	51,594	110	474,448	78,289	1,187,943
Standard Error:				285	558	227	10	689	280	1090
CV (%):				8.0%	8.2%	14.8%	57.5%	24.2%	19.2%	18.6%
95% CI:				3,011-4,130	5,707-7,894	1,090-1,980	0-39	1,491-4,192	907-2,003	3,713-7,986

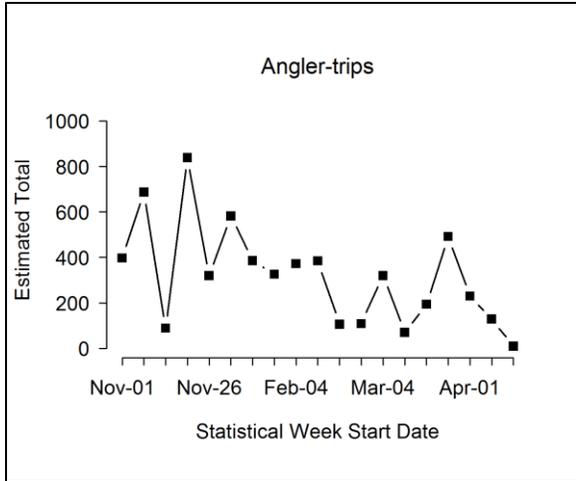


Figure 4.1 Temporal patterns in fishing effort during the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013.

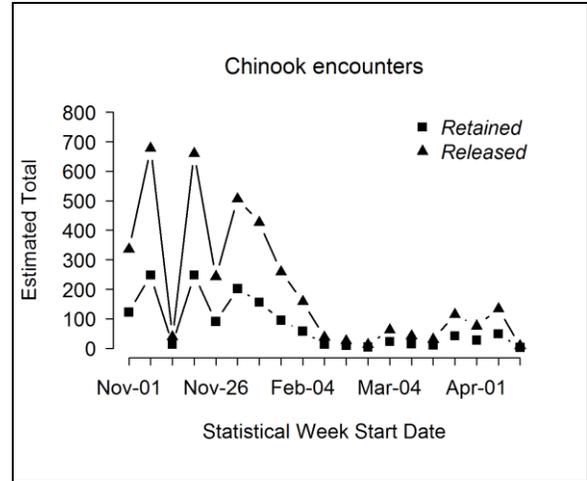


Figure 4.3 Temporal patterns in Chinook encounters (number retained and released) during the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013.

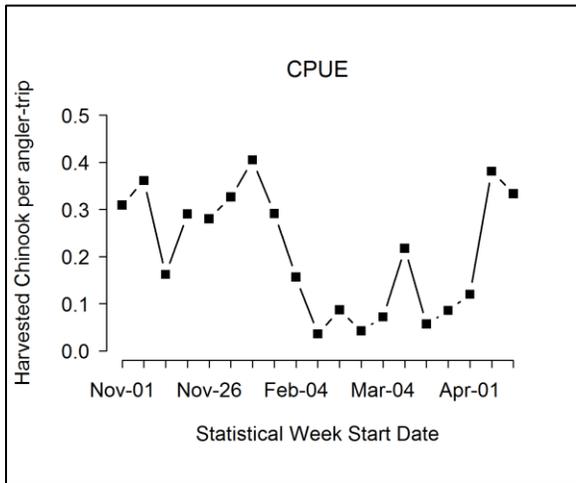


Figure 4.2 Temporal patterns in CPUE (number of Chinook landed per angler trip) during the Area 9 Chinook MSF from November 1-30, 2012 and January 16-April 15, 2013.

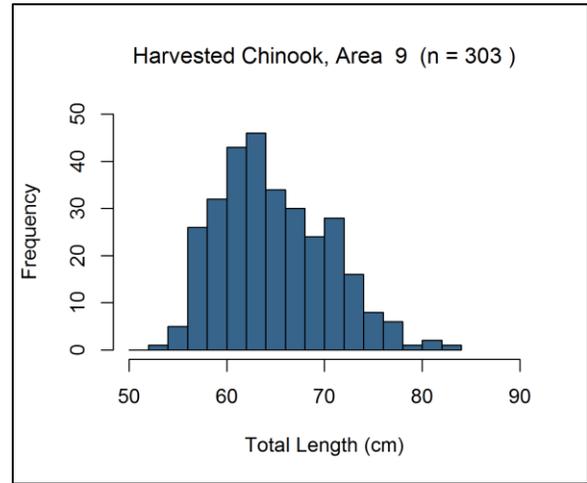


Figure 4.4 Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013.

Table 4.3 Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the Area 9 Chinook MSF from November 1-30, 2012 (*left panel*) and January 16 - April 15, 2013 (*right panel*).

Mark Type	November # Sampled			Mark Type	January – April # Sampled		
	Legal-size	Sublegal-size	Total		Legal-size	Sublegal-size	Total
Marked	133	6	139	Marked	164	0	164
Unmarked	0	0	0	Unmarked	0	0	0
Total	133	6	139	Total	164	0	164

Table 4.4 Summary of CWTs recovered from Chinook salmon harvested during the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	Number DITs
British Columbia (21.4%)	Fraser River – Thompson River (7.1%)	Chilliwack R	Chilliwack River H	1 (7.1%)	1
	Georgia Strait (14.3%)	Cowichan River	Cowichan River H	2 (14.3%)	0
Washington (78.6%)	Northern Washington (14.3%)	Nooksack R -NF 01.0120	Kendall Creek H	1 (7.1%)	1
		Friday Creek - 03.0017	Samish Hatchery	1 (7.1%)	1
	Skagit River (14.3%)	Cascade River - 03.1411	Marblemount H	2 (14.3%)	0
	Mid Puget Sound (50%)	Big Soos Creek -09.0072	Soos Creek H	1 (7.1%)	1
		Grovers Creek Hatchery	Grovers Creek H	3 (21.4%)	3
		Gorst Creek - 15.0216	Gorst Rearing Pond	1 (7.1%)	0
		Voight Creek TR10.0428	Voights Creek H	2 (14.3%)	0
Total				14	7

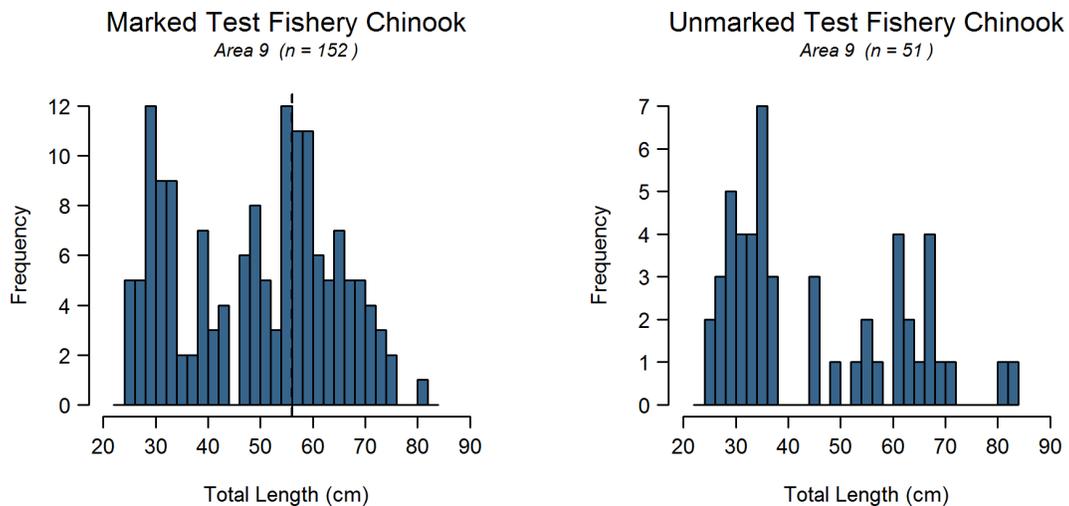


Figure 4.5 Length-frequency distributions of marked (*left panel*) and unmarked (*right panel*) Chinook encountered by test fishers during the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013. The vertical dashed line in the left panel corresponds to the legal size limit (22 in or 56 cm).

Table 4.5 Composition of test fishery Chinook encounters and associated mark-rate and size/mark-status proportion estimates for the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Month	Stat Week	Fishing Effort		Legal		Sublegal		Total		
		Days	Hours Fished	AD	UM	AD	UM			
Nov	45	2	6.8	4	1	0	1	6		
	46	4	13.0	11	6	4	2	23		
	47	3	10.8	2	0	6	5	13		
	48	1	5.3	3	0	6	1	10		
	49	4	15.8	3	0	19	4	26		
	Total	14	51.8	23	7	35	13	78		
	Size/mark-status composition:		0.29 (0.0027)		0.09 (0.0011)		0.45 (0.0032)		0.17 (0.0018)	
Legal size mark rate:		0.77 (0.0062)								
Overall mark rate:		0.74 (0.0025)								
Jan - Apr	3	5	22.3	4	2	6	0	12		
	4	2	9.0	1	1	3	1	6		
	5	5	20.1	3	0	9	6	18		
	6	4	20.5	3	1	1	3	8		
	7	7	34.1	2	2	20	5	29		
	8	2	9.2	3	0	3	0	6		
	9	2	6.7	0	0	0	0	0		
	10	4	21.8	4	0	4	1	9		
	11	3	10.9	2	1	1	3	7		
	12	4	18.9	2	1	2	1	6		
	13	3	17.3	3	0	1	0	4		
	14	2	10.4	5	1	3	0	9		
	15	2	7.3	5	0	4	2	11		
	16	0	0.0	0	0	0	0	0		
	Total	45	208.5	37	9	57	22	125		
Size/mark-status composition:		0.30 (0.0017)		0.07 (0.0005)		0.46 (0.0020)		0.18 (0.0012)		
Legal size mark rate:		0.80 (0.0035)								
Overall mark rate:		0.75 (0.0015)								
Season Total	Grand Total	59	260.3	60	16	92	35	203		
	Size/mark-status composition¹:		0.30 (0.0010)		0.08 (0.0004)		0.45 (0.0012)		0.17 (0.0007)	
	Legal size mark rate:		0.79 (0.0022)							
Overall mark rate:		0.75 (0.0009)								

¹ Note: Results of a Chi-Square test between Nov and Jan-Apr size/mark-status proportions suggest no significant difference. Therefore, encounters from the two time periods were combined and season total proportions were used to estimate total Chinook encounters and associated impacts.

Table 4.6 Total Chinook encountered (retained and released) by private-boat anglers logging their trips on VTRs, with estimates of legal-size and overall (legal and sublegal) mark rates during the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
November 1-30, 2012								
Private Boat VTR	17 1-trip VTRs, 34 Angler Trips	12	1	43	21	77	0.71	0.92
November size/mark-status composition:		0.16	0.01	0.56	0.27			
Variance:		(0.0017)	(0.0002)	(0.0032)	(0.0026)			
January 16 - April 15, 2013								
Private Boat VTR	42 1-trip VTRs, 69 Angler Trips	32	9	41	16	97	0.74	0.78
Jan-April size/mark-status composition:		0.33	0.09	0.41	0.16			
Variance:		(0.0023)	(0.0009)	(0.0025)	(0.0014)			

We used Pearson’s chi-square test to compare size/mark-status proportions in the test fishery between two separate time periods during the Area 9 winter MSF season (Nov. 1-30 vs. Jan 16-Apr 15). Results indicated no significant difference in proportions between the two time strata ($\chi^2=0.222$, $df=3$, $p\text{-value}=0.974$), suggesting that they may be combined. We next compared private fleet VTR data between each time period. Results of the Pearson chi-square analysis indicated a significant difference in VTR proportions between the two time periods ($\chi^2=13.89$, $df=3$, $p\text{-value}=0.003$). Given these results, we elected to use test fishery data only. However, even though there was no significant difference between the two time strata, we calculated encounter and mortality estimates separately for each stratum due to differences in the aerial sample fraction between the two strata.

Table 4.7 Summary of season-wide fishery impact estimates for the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013. Release mortality rate = 0.15 for legal fish and 0.20 for sublegal fish. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	1,728	1,504	225	34	1,537	55,418	235	1,076 – 1,999	15
Legal UM	469	0	469	70	70	434	21	29 - 111	30
Sublegal AD	2,648	31	2,617	523	554	11,584	108	343 - 765	19
Sublegal UM	1,004	18	986	197	215	2,469	50	118 - 313	23
Total	5,849	1,553	4,296	825	2,378	69,905	264	1,859 – 2,896	11

Table 4.8 Comparison of modeled (FRAM model run 1512) and estimated total Chinook encounters for the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped) and UM = unmarked.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	1,246	281	965	17
	AD	5,939	1,334	4,605	1,161
	Total	7,185	1,615	5,570	1,178
	% Marked	83	83	83	99
Estimated (Creel) Encounters	UM	1,473	469	1,004	18
	AD	4,376	1,728	2,648	1,535
	Total	5,849	2,197	3,652	1,553
	% Marked	75	79	73	99

Table 4.9 Comparison of modeled (FRAM model run 1512) and estimated total Chinook mortalities for the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped) and UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	250	2,166	2,416	286	2,092	2,378
Released Legal	40	84	124	70	34	104
Released Sublegal	193	921	1,114	197	523	721
Landed Only	17	1,161	1,178	18	1,535	1,553

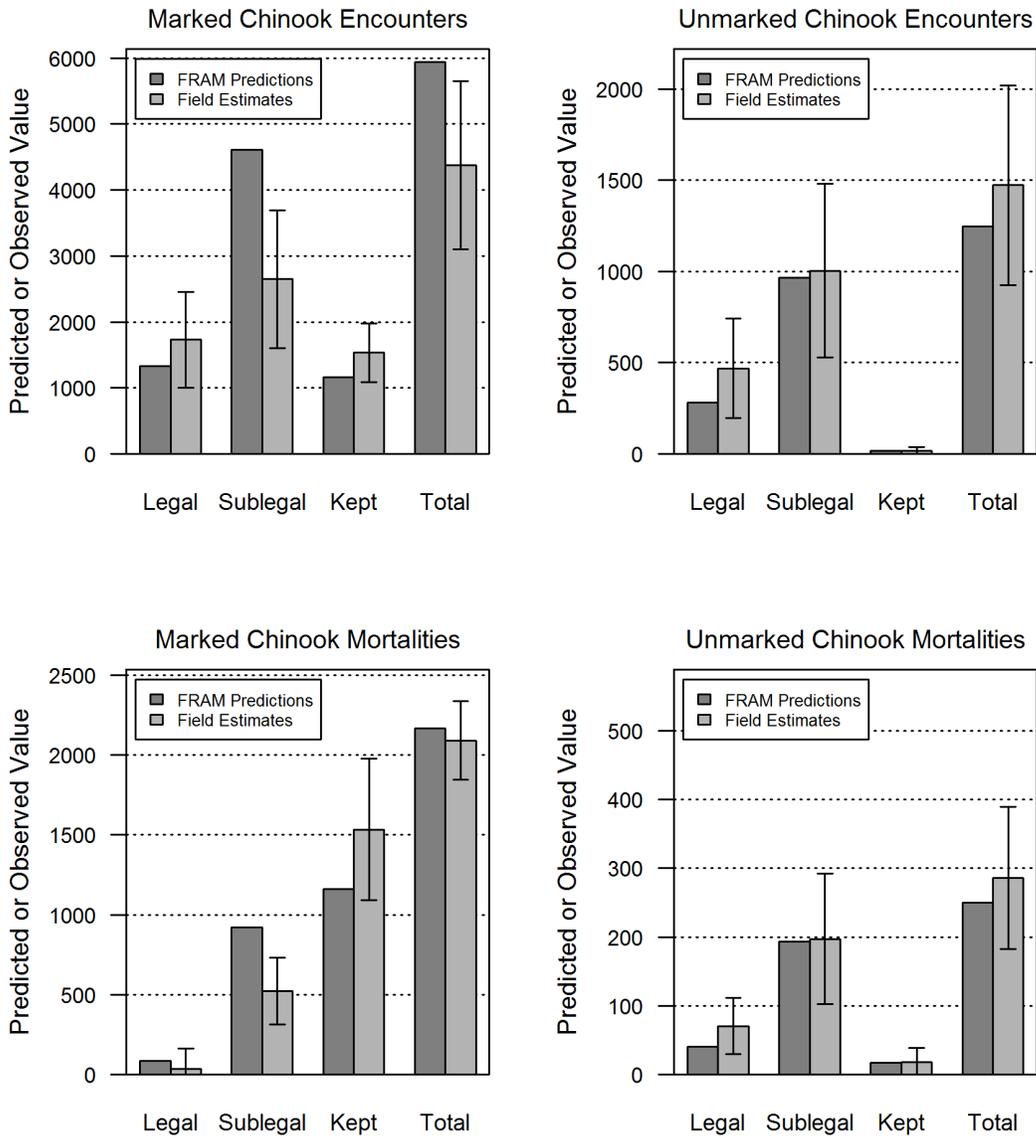


Figure 4.6 Comparison of modeled (FRAM model run 1512) and estimated total Chinook encounters and mortalities for the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013. Error bars represent approximate 95% confidence intervals for field estimates.

Table 4.10 Summary of double-index tagged (DIT) Chinook kept by anglers, and estimated total mortality of unmarked DIT Chinook due to hook-and-release impacts resulting from the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013. AD = marked (adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs'd	AD DIT Harvest		UM DIT Enc.	UM DIT Mortality		
			Est.	var(Est.)		Est.	var(Est.)	SE(Est.)
Grovers Creek Hatchery	2010	3	15.4	63.4	15.3	1.5	0.632	1.4
Chilliwack River Hatchery	2010	1	5.1	21.1	2.5	0.3	0.051	0.2
Kendall Creek Hatchery	2010	1	5.1	21.1	5.0	0.5	0.198	0.4
Samish Hatchery	2010	1	5.1	21.1	5.3	0.5	0.228	0.5
Soos Creek Hatchery	2009	1	5.1	21.1	5.4	0.5	0.232	0.5
Total		7	35.9	148.0	33.5	3.4	1.340	3.0

Table 4.11 Monthly sample rates (Total retained Chinook sampled¹ / Estimated retained Chinook) in the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
November	45-49	1 Nov - 30 Nov	718	6	724	139	0	139	19.2%
January	3-5	16 Jan - 3 Feb	441	12	453	81	0	81	17.9%
February	6-9	4 Feb - 3 Mar	205	0	205	44	0	44	21.5%
March	10-13	4 Mar - 31 Mar	91	0	91	26	0	26	28.5%
April	14-16	1 Apr - 15 Apr	80	0	80	13	0	13	16.3%
Season Total			1,535	18	1,553	303	0	303	19.5%

^{1/} Number of retained Chinook sampled includes all retained Chinook inspected for CWTs, from all sites sampled during the winter 2012-13 Area 9 Chinook MSF (the sample-frame sites included in the creel estimates and the fish sampled as part of baseline sampling in the Area).

Table 4.12 Summary of aerial survey and dockside data used to estimate the fraction of Area 9 effort captured in the four-site sample frame during the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013. See Methods Report (WDFW 2012a) for computational details and notation.

Survey Date	Stratum	Aerial Survey Details			Dockside Sampling Details			Sample Fraction, f_{ij}
		Start Time	End Time	Total Boats, m_{ij}	Total Boats, Sy_{ijk}	Sampled Boats	Active Boats, X_{ij}	
10-Nov	Weekend	10:44	11:37	115	158	66	48	0.417
16-Nov	Weekend	10:42	11:25	19	31	13	8	0.421
November Summary Statistics		Totals		134	189	79	56	
		Mean		67	95	40	28	0.419
		St Dev		67.9	90.0	37.5	28.3	0.003
		CV(%)		101.3%	95.2%	94.9%	101.0%	0.6%
10-Feb	Weekend	15:06	15:36	17	230	27	2	0.118
19-Feb	Weekday	10:44	11:18	11	11	6	6	0.545
23-Feb	Weekend	10:22	10:43	9	18	4	2	0.222
27-Feb	Weekday	10:35	11:10	8	16	2	1	0.125
2-Mar	Weekend	10:24	10:57	12	24	6	3	0.250
8-Mar	Weekend	11:12	11:36	16	24	12	8	0.500
9-Mar	Weekend	14:22	14:49	22	43	29	15	0.682
15-Mar	Weekend	10:15	10:48	13	20	3	2	0.154
17-Mar	Weekend	10:45	11:11	11	14	5	4	0.364
22-Mar	Weekend	14:20	14:53	5	10	4	2	0.400
24-Mar	Weekend	10:25	10:55	35	51	25	17	0.486
6-Apr	Weekend	10:15	10:42	38	38	13	13	0.342
9-Apr	Weekday	10:13	10:40	13	13	3	3	0.231
12-Apr	Weekend	10:40	11:15	13	20	3	2	0.154
Jan - Apr Summary Statistics		Totals		223	530	142	80	
		Mean		16	38	10	6	0.327
		St Dev		9.6	56.5	9.7	5.4	0.177
		CV(%)		60.5%	149.3%	95.8%	94.7%	54.1%

Table 4.13 Fishery-total estimates of retained and released salmon (*other than Chinook*) in the Area 9 Chinook MSF from November 1-30, 2012 and January 16 - April 15, 2013. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark-status.

Week	Start Date	End Date	Retained Salmon				Released Salmon				
			Coho AD	Coho UM	Chum	Cutthroat Trout	Coho AD	Coho UM	Coho UK	Cutthroat Trout	Unk Salmon
45	1-Nov	4-Nov	0	4	8	4	16	12	12	4	97
46	5-Nov	11-Nov	0	0	8	0	26	8	5	0	429
47	12-Nov	18-Nov	0	0	0	0	0	0	0	0	18
48	19-Nov	25-Nov	0	0	0	0	0	0	0	0	138
49	26-Nov	30-Nov	0	0	0	0	0	0	0	0	35
3	16-Jan	20-Jan	0	0	0	0	0	0	0	0	67
4	21-Jan	27-Jan	0	0	0	0	0	0	0	0	28
5	28-Jan	3-Feb	0	0	0	0	0	0	0	0	18
6	4-Feb	10-Feb	0	0	0	0	0	0	18	0	23
7	11-Feb	17-Feb	0	0	0	0	0	0	6	0	2
8	18-Feb	24-Feb	0	0	0	0	0	0	0	0	0
9	25-Feb	3-Mar	0	0	0	0	0	0	0	0	0
10	4-Mar	10-Mar	0	0	0	0	5	0	0	0	0
11	11-Mar	17-Mar	0	0	0	0	0	0	0	0	0
12	18-Mar	24-Mar	0	0	0	0	0	0	0	0	0
13	25-Mar	31-Mar	5	0	0	0	5	0	0	0	11
14	1-Apr	7-Apr	0	0	0	0	0	0	0	0	6
15	8-Apr	14-Apr	0	0	0	0	0	0	0	0	0
16	15-Apr	15-Apr	0	0	0	0	0	0	0	0	0
Area 9 Season Total:			5	4	17	4	51	20	41	4	872
Variance:			11	4	43	4	420	64	291	4	26,013
Standard Error:			3	2	7	2	20	8	17	2	161
CV (%):			71.7%	57.7%	39.1%	57.7%	40.1%	39.5%	41.4%	57.7%	18.5%
95% CI:			0-11	0-8	4-30	0-8	11-91	5-36	8-75	0-8	556-1,188

Table 4.14 Season-total estimates of Chinook encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Area 9 Chinook MSF. Values may not add exactly due to rounding error.

Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
		LM	LU	SM	SU	LM	LU	SM	SU	
Jan 16 - Apr 15, 2008	6,887	1,333	3	72	0	195	304	1,288	375	3,570
Nov 1-30, 2008 & Jan 16 - Apr 15, 2009	7,064	871	14	14	0	130	158	3,520	2,837	7,545
Nov 1-30, 2009 & Jan 16 - Apr 15, 2010	6,823	1,450	18	106	10	217	353	2,166	615	4,934
Nov 1-30, 2010 & Jan 16 - Apr 15, 2011	4,425	428	0	3	0	64	117	583	422	1,618
Nov 1-30, 2011 & Jan 16 - Apr 15, 2012	4,361	421	0	34	3	63	140	1,433	548	2,642
Nov 1-30, 2012 & Jan 16 - Apr 15, 2013	6,801	1,504	0	31	18	225	469	2,617	986	5,849

5) Marine Area 10 Winter Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a sixth consecutive winter Chinook MSF in Marine Area 10 from October 1, 2012 through January 31, 2013. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program in Area 10 throughout the season in order to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included dockside creel sampling, on-the-water effort surveys, test fishing and collection of VTRs from the angling public. **Table 5.1** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). In the following section we present results from our monitoring activities during the Area 10 winter Chinook MSF from October 1, 2012 through January 31, 2013.

Table 5.1 Sampling/estimation details on target parameters associated with the overall Area 10 winter Chinook MSF monitoring program.

Activity	Focal Parameter(s)	Secondary Parameter(s)	Sample Unit(s)	Finest Estimation Time Step	Comments
Dockside Creel Sampling	Fishing effort (boat & angler trips); kept and released fish	Catch rates (CPUE); length, age, and CWT composition of harvest ¹ ; collection of angler fishing methods.	Angler trip; kept fish; reported fish release.	Two weeks	Creel estimates were produced for two-week estimation periods and stratified into “weekday” (Mon.-Thurs.) and “weekend” (Fri.-Sun.) day-type strata within weeks. For the weekday stratum, we sampled $n=2$ days out of $N=8$ available weekdays per two-week period. For the weekend stratum, we sampled $n=2$ days out of $N=3$ available weekend days per week.
On-the-water Surveys	Proportion of total angler effort that uses sample-frame sites (i.e., site “size measures”) versus out-of-frame sites.	Total on-water boat and angler counts at assumed peak effort time interval (instantaneous count); spatial distribution of recreational fishing boats in the area.	Boats and anglers	Month	A total of 7 boat surveys were conducted during the four-month fishery. The results of these surveys were incorporated into multi-year site-weight averages.
Test Fishing	Size (legal/sublegal) and mark-status composition (marked, unmarked) of encountered Chinook	Chinook length, age, and DNA-based ² stock composition; species composition of non-Chinook encounters	Fish encounter	Season (4 months)	Season-total test fishery data were combined with private VTR data to provide a single estimate of size/mark-status proportions for use in the estimation of total Chinook encounters and associated impacts; LM=7%, LU=1%, SM=62%, SU=29%. (See Tables 5.5 and 5.6).
Voluntary Trip Reports (VTRs)	Size (legal/sublegal) and mark-status composition (marked, unmarked) of encountered Chinook	Encounter data for non-Chinook species (e.g., Coho) that the angler may record on the VTR form	Fish encounter	Season (4 months)	Size/mark-status compositions of private VTR and test fishing data were compared using Pearson’s chi-square test. Results indicated no significant difference; thus, we combined the two datasets in order to improve the precision of estimates (see above; Tables 5.5 and 5.6).
Overall Fishery Impacts Estimation	Total Chinook encounters and mortalities, by size/mark-status group	Ratios of encounters and mortalities per kept Chinook	N/A	Season (4 months)	Estimated on a monthly time step but considered at the season-total level.
Coded-wire tag (CWT) Impacts Estimation	Marked/unmarked double-index tag (DIT) encounters and mortalities	N/A	N/A	Season (4 months)	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

¹The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.²Though samples were collected, DNA-based estimates of stock composition are not yet available for this fishery.

Table 5.2 Estimates of total fishing effort and total salmon catch (harvest and releases) during the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
Oct	41	1-Oct	7-Oct	983	1,769	4	0	43	21	68
	42	8-Oct	14-Oct	452	752	0	0	0	0	0
	43	15-Oct	21-Oct	158	280	17	0	166	80	263
	44	22-Oct	28-Oct	188	330	3	0	26	13	41
Nov	45	29-Oct	4-Nov	342	615	0	0	0	0	0
	46	5-Nov	11-Nov	103	172	7	0	68	33	108
	47	12-Nov	18-Nov	18	31	0	0	0	0	0
	48	19-Nov	25-Nov	75	149	11	0	114	55	180
Dec	49	26-Nov	2-Dec	28	53	4	0	42	20	66
	50	3-Dec	9-Dec	65	106	28	0	275	132	435
	51	10-Dec	16-Dec	36	79	8	0	83	40	131
	52	17-Dec	23-Dec	51	95	11	0	105	50	166
	53	24-Dec	30-Dec	208	341	11	0	110	53	174
Jan	54/1	31-Dec	6-Jan	131	256	5	0	53	26	84
	2	7-Jan	13-Jan	58	77	11	0	114	55	181
	3	14-Jan	20-Jan	61	84	0	0	0	0	0
	4	21-Jan	27-Jan	43	82	0	0	0	0	0
	5	28-Jan	31-Jan	22	50	0	0	0	0	0
Area 10 Season Total:				3,023	5,321	121	0	1,201	575	1,897
Variance:				130,624	472,906	987	0	150,818	33,301	373,113
SE:				361	688	31	0	388	182	611
CV (%):				12.0%	12.9%	26.1%	-	32.3%	31.7%	32.2%
95% CI:				2,314-3,731	3,973-6,669	59-182	-	440-1,962	218-933	700-3,094

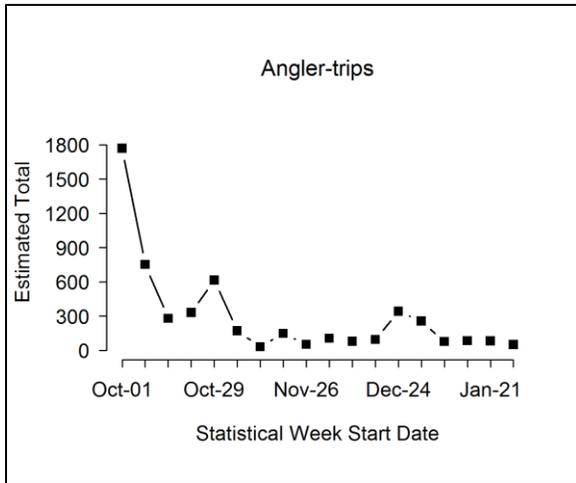


Figure 5.1 Temporal patterns in fishing effort during the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013.

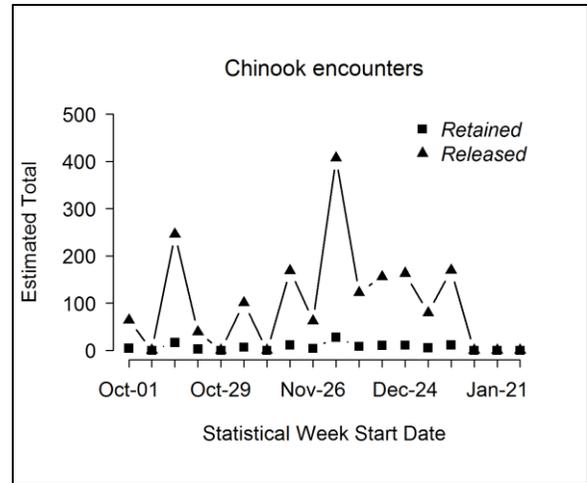


Figure 5.3 Temporal patterns in Chinook encounters (number retained and released) during the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013.

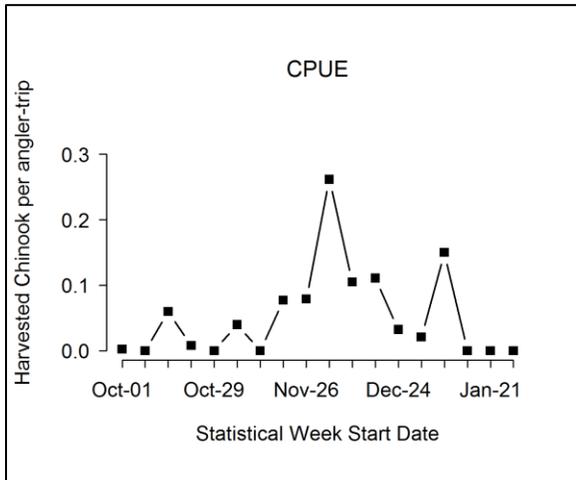


Figure 5.2 Temporal patterns in CPUE (number of Chinook landed per angler trip) during the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013.

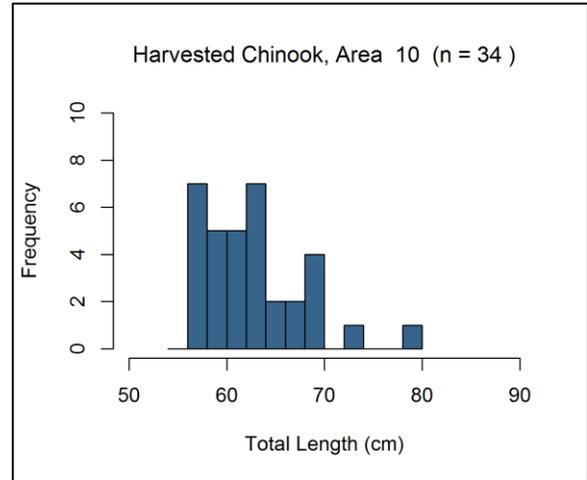


Figure 5.4 Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013.

Table 5.3 Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013.

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	34	0	34
Unmarked	0	0	0
Total	34	0	34

Table 5.4 Summary of CWTs recovered from Chinook salmon harvested during the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	Number DITs
British Columbia (100%)	Fraser R – Thompson R (100%)	Chilliwack River	Chilliwack River H	1 (100%)	1
Total				1	1

Table 5.5 Composition of test fishery Chinook encounters and associated mark-rate and size/mark-status proportion estimates for the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Stat Week	Fishing Effort		Legal		Sublegal		Total
	Days	Hours Fished	AD	UM	AD	UM	
41	3	11.3	0	0	4	5	9
42	4	18.0	0	0	14	5	19
43	3	12.4	0	0	6	4	10
44	3	15.5	4	1	12	14	31
45	2	9.5	5	0	6	9	20
46	1	3.9	0	0	0	2	2
47	0	0.0	0	0	0	0	0
48	1	5.8	4	0	13	6	23
49	1	3.8	0	0	1	0	1
50	2	8.1	0	0	8	4	12
51	3	15.6	1	0	24	9	34
52	3	10.3	1	0	2	2	5
53	4	17.7	2	1	22	5	30
54/1	4	13.5	0	1	1	0	2
2	6	27.6	2	1	17	5	25
3	2	9.3	0	0	1	0	1
4	0	0.0	0	0	0	0	0
5	1	5.5	0	0	5	1	6
Total	43	187.9	19	4	136	71	230
Size/mark-status composition:		0.08 (0.000)	0.02 (0.000)	0.59 (0.001)	0.31 (0.001)		
Legal size mark rate:		0.83 (0.007)					
Overall mark rate:		0.67 (0.001)					

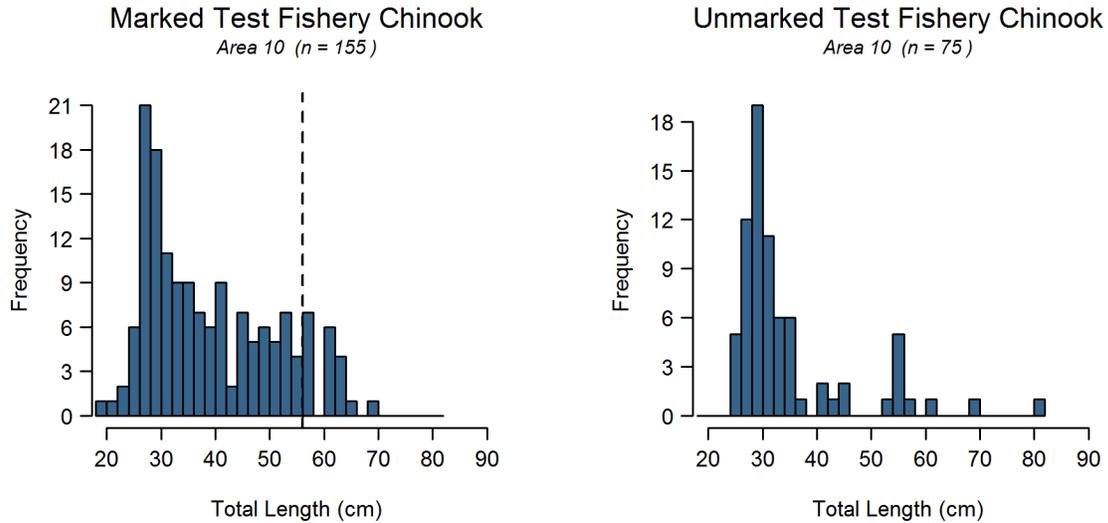


Figure 5.5 Length-frequency distributions of marked (*left panel*) and unmarked (*right panel*) Chinook encountered by test fishers during the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013. The vertical dashed line in the left panel corresponds to the legal size limit (22 in or 56 cm).

Table 5.6 Total Chinook encountered (retained and released) by private-boat and charter boat anglers logging their trips on VTRs, with estimates of legal-size and overall (legal and sublegal) mark rates during the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private VTR	32 1-trip VTRs, 50 Angler Trips	7	1	86	32	126	0.74	0.88
Size/mark-status composition:		0.06	0.01	0.68	0.25			
Variance:		(0.0004)	(0.0001)	(0.0017)	(0.0015)			

We used Pearson’s chi-square test to compare the size/mark-status composition of the private VTR and test fishery datasets. Results were not significant ($\chi^2 = 3.26$, $df = 3$, $p\text{-value} = 0.353$), suggesting that the two datasets can be combined into one pooled season-total estimate of size/mark-status proportions. Based on these results, and in order to achieve more precise estimates due to a low proportion of LM fish, we elected to use the pooled totals of the VTR and test fishery data (LM=26, LU=5, SM=222, SU=103) to estimate the size/mark status proportions needed to produce the Chinook encounter and mortality estimates in the Area 10 winter mark-selective fishery.

Table 5.7 Summary of season-wide fishery impact estimates for the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013. Release mortality rate = 0.15 for legal fish and 0.20 for sublegal fish. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	139	121	18	3	123	1,068	33	59 - 187	27
Legal UM	27	0	27	4	4	4	2	0 - 8	53
Sublegal AD	1,183	0	1,183	237	237	5,889	77	86 - 387	32
Sublegal UM	549	0	549	110	110	1,324	36	38 - 181	33
Total	1,897	121	1,776	353	474	8,285	91	295 - 652	19

Table 5.8 Comparison of modeled (FRAM model run 1512) and estimated total Chinook encounters for the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped) and UM = unmarked.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	3,706	681	3,025	27
	AD	10,959	2,244	8,715	1,952
	Total	14,665	2,925	11,740	1,979
	% Marked	75	77	74	99
Estimated (Creel) Encounters	UM	575	27	549	0
	AD	1,321	139	1,183	121
	Total	1,897	165	1,732	121
	% Marked	70	84	68	100

Table 5.9 Comparison of modeled (FRAM model run 1512) and estimated total Chinook mortalities for the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped) and UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	731	3,836	4,567	114	360	474
Released Legal	99	141	240	4	3	7
Released Sublegal	605	1,743	2,348	110	237	346
Landed Only	27	1,952	1,979	0	121	121

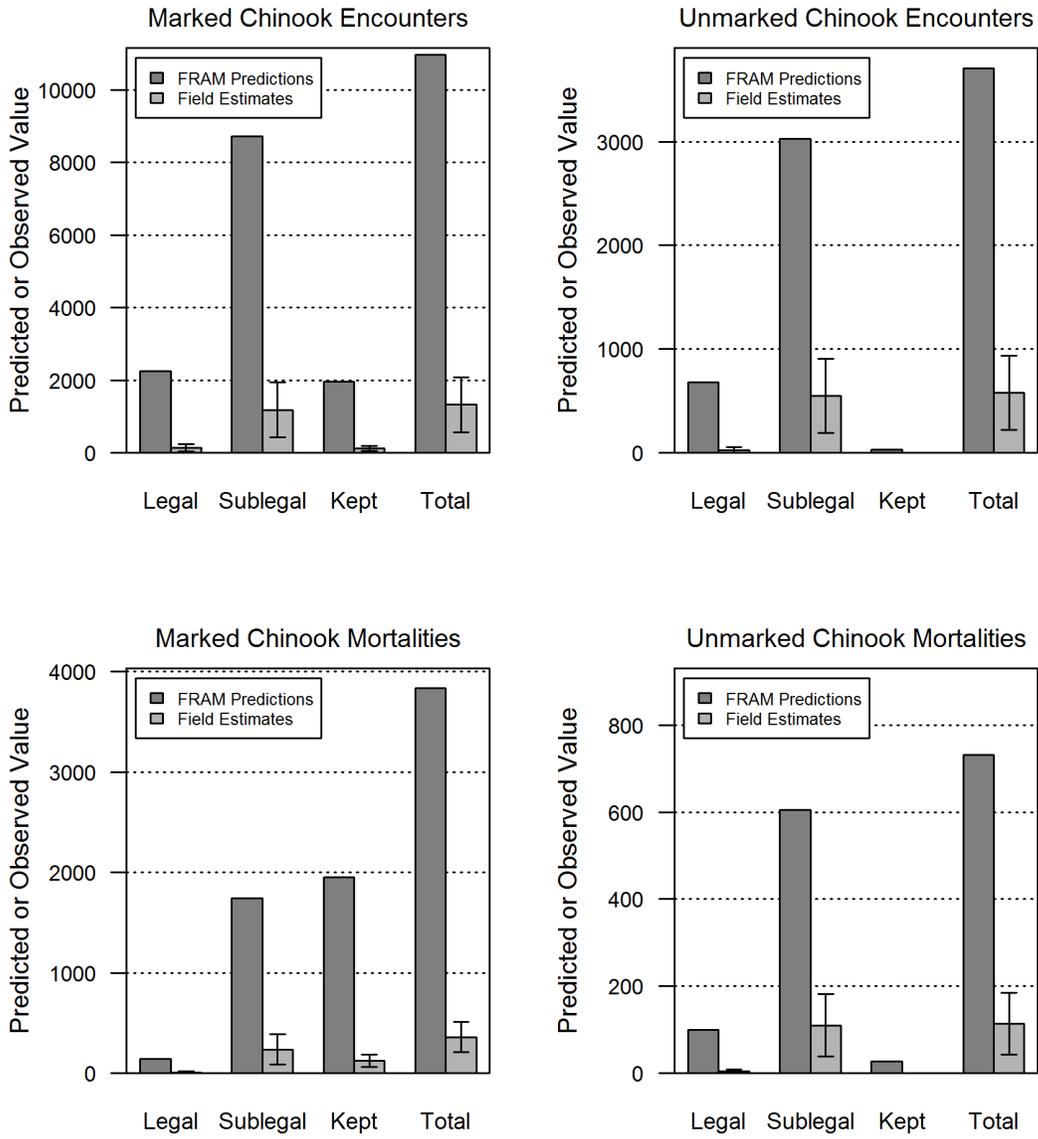


Figure 5.6 Comparison of modeled (FRAM model run 1512) and estimated total Chinook encounters and mortalities for the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013. Error bars represent approximate 95% confidence intervals for field estimates.

Table 5.10 Summary of double-index tagged (DIT) Chinook kept by anglers, and estimated total mortality of unmarked DIT Chinook due to hook-and-release impacts resulting from the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013. AD = marked (adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs'd	AD DIT Harvest		UM DIT Enc.	UM DIT Mortality		
			Est.	var(Est.)		Est.	var(Est.)	SE(Est.)
Chilliwack River Hatchery	2010	1	3.5	9.0	1.7	0.2	0.022	0.1
Total		1	3.5	9.0	1.7	0.2	0.022	0.1

Table 5.11 Monthly sample rates (Total retained Chinook sampled¹ / Estimated retained Chinook) in the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
October	41-44	1 Oct - 28 Oct	24	0	24	2	0	2	8.4%
November	45-48	29 Oct - 25 Nov	18	0	18	9	0	9	49.2%
December	49-53	26 Nov - 30 Dec	62	0	62	20	0	20	32.4%
January	54/1-5	31 Dec - 31 Jan	17	0	17	3	0	3	17.8%
Season Total			121	0	121	34	0	34	28.2%

¹ Number of retained Chinook sampled includes all retained Chinook inspected for CWTs, from all sites sampled during the four-month winter Area 10 fishery (i.e., the two selected sites per sampling day for creel [Murthy] estimates, plus the fish sampled as part of baseline [non-Murthy] sampling in the Area).

Table 5.12 Fishery-total estimates of retained and released salmon (*other than Chinook*) in the Area 10 Chinook MSF from October 1, 2012 - January 31, 2013. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark-status.

Stat Week	Start Date	End Date	Retained Salmon			Released Salmon				
			Coho AD	Coho UM	Chum	Coho AD	Coho UM	Coho UK	Chum	Unk Salmon
41	1-Oct	7-Oct	378	499	40	60	48	311	7	1,897
42	8-Oct	14-Oct	208	163	0	40	39	189	0	985
43	15-Oct	21-Oct	8	67	0	23	0	64	0	296
44	22-Oct	28-Oct	3	26	5	0	0	26	0	662
45	29-Oct	4-Nov	0	0	0	0	0	68	0	56
46	5-Nov	11-Nov	0	0	0	0	0	13	0	42
47	12-Nov	18-Nov	0	0	0	0	0	0	0	13
48	19-Nov	25-Nov	0	0	0	0	0	0	0	148
49	26-Nov	2-Dec	0	0	0	0	0	10	0	6
50	3-Dec	9-Dec	0	0	0	0	0	6	0	0
51	10-Dec	16-Dec	0	0	0	0	0	0	0	67
52	17-Dec	23-Dec	0	0	0	0	0	0	0	59
53	24-Dec	30-Dec	0	0	0	0	0	0	0	815
54/1	31-Dec	6-Jan	0	0	0	0	0	0	0	205
2	7-Jan	13-Jan	0	0	0	0	0	0	0	7
3	14-Jan	20-Jan	0	0	0	0	0	0	0	7
4	21-Jan	27-Jan	0	0	0	0	0	15	0	0
5	28-Jan	31-Jan	0	0	0	0	0	0	0	0
Area 10 Season Total:			597	754	45	123	87	702	7	5,267
Variance:			72,525	32,648	44	1,757	609	49,977	20	357,248
Standard Error:			269	181	7	42	25	224	4	598
CV (%):			45%	24%	15%	34%	28%	32%	60%	11%
95% CI:			70-1,125	400-1,109	32-59	41-205	38-135	264-1,140	0-16	4,095-6,438

Table 5.13 Summary of the total number of anglers intercepted in Area 10 during on-the-water surveys conducted from October 1, 2012 - January 31, 2013. Sites in bold represent those included in the dockside sample frame.

Site Name	Total Anglers (less 'Tengu' Derby anglers) ¹	Season Total (unadjusted) Size Measure	Total Anglers (with 'Tengu' Derby anglers) ¹	Season Total (unadjusted) Size Measure
14th Street Ramp	2	0.005	2	0.004
Armeni Public Ramp	39	0.099	82	0.183
Bremerton Yacht Club	5	0.013	5	0.011
Brownsville Marina	20	0.051	20	0.045
Des Moines Marina	4	0.010	4	0.009
Eagle Harbor Marina	13	0.033	13	0.029
Eagle Harbor Public Ramp	2	0.005	2	0.004
Edmonds Boat Sling	23	0.058	23	0.051
Edmonds Dry Storage	15	0.038	15	0.034
Edmonds Marina	58	0.147	58	0.130
Elliott Bay Marine	14	0.035	14	0.031
Everett Ramp	6	0.015	6	0.013
Evergreen Park Ramp	2	0.005	2	0.004
Gig Harbor Marina	1	0.003	1	0.002
Harbor Island Marina	2	0.005	4	0.009
Kingston Guest Dock	2	0.005	2	0.004
Kingston Marina	8	0.020	8	0.018
Kingston Ramp	20	0.051	20	0.045
Manchester Ramp	14	0.035	16	0.036
Mukilteo Ramp	3	0.008	3	0.007
Point Defiance Ramp	2	0.005	2	0.004
Port of Seattle Dock	0	0.000	3	0.007
Private	16	0.041	16	0.036
Private-Lake WA	2	0.005	2	0.004
Pt. Defiance Boathouse	3	0.008	3	0.007
Redondo Ramp	2	0.005	2	0.004
Seacrest Pier	0	0.000	2	0.004
Shilshole Marina	31	0.078	31	0.069
Shilshole Public Ramp	76	0.192	76	0.170
Simpson Marina	6	0.015	6	0.013
Winslow Marina	2	0.005	2	0.004
Yarrow Bay Marina	2	0.005	2	0.004
Area 10 Total Anglers	395	1.000	447	1.000

¹ See WDFW 2012a for detailed methods descriptions on calculating Area 10 site size measures during the Tengu Derby period (Tengu Derby occurs on Sundays only, extending from the middle of October through late December).

Table 5.14 Season-total estimates of Chinook encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Area 10 winter Chinook MSF. Values may not add exactly due to rounding error.

Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
		LM	LU	SM	SU	LM	LU	SM	SU	
Dec 1, 2007 - Jan 31, 2008	2,544	539	21	96	0	80	163	1,860	361	3,120
Dec 1, 2008 - Jan 31, 2009	2,029	247	0	4	0	37	36	1,010	462	1,796
Oct 1, 2009 - Jan 31 2010	5,560	354	2	42	0	53	83	2,531	898	3,962
Oct 1, 2010 - Jan 31, 2011	4,461	150	0	13	0	22	53	814	740	1,792
Oct 1, 2011 - Jan 31, 2012	4,615	227	5	15	9	34	183	2,870	1,230	4,573
Oct 1, 2012 - Jan 31, 2013	5,321	121	0	0	0	18	27	1,183	549	1,897

6) Marine Area 11 Winter Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a fourth consecutive winter Chinook MSF in Marine Area 11 from February 1 through April 30, 2013. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program in Area 11 throughout the season in order to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included dockside creel sampling, on-the-water effort surveys, and collection of VTRs from the angling public. **Table 6.1** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). In the following section we present results from our monitoring activities during the Area 11 winter Chinook MSF from February 1 through April 30, 2013.

Table 6.1 Sampling/estimation details on target parameters associated with the overall Area 11 winter Chinook MSF monitoring program.

Activity	Focal Parameter(s)	Secondary Parameter(s)	Sample Unit(s)	Finest Estimation Time Step	Comments
Dockside Creel Sampling	Fishing effort (boat & angler trips); kept and released fish	Catch rates (CPUE); length, age, and CWT composition of harvest ¹ ; collection of angler fishing methods.	Angler trip; kept fish; reported fish release	Two weeks	Creel estimates were produced for two-week estimation periods and stratified into “weekday” (Mon.-Thurs.) and “weekend” (Fri.-Sun.) day-type strata within weeks. For the weekday stratum, we sampled $n=2$ days out of $N=8$ available weekdays per two-week period. For the weekend stratum, we sampled $n=2$ days out of $N=3$ available weekend days per week.
On-the-water Surveys	Proportion of total angler effort that uses sample-frame sites (i.e., site “size measures”) versus out-of-frame sites.	Total on-water boat and angler counts at assumed peak effort time interval (instantaneous count); spatial distribution of recreational fishing boats in the area.	Boats and anglers	Month	A total of 5 boat surveys were conducted during the three-month fishery. The results of these surveys were incorporated into multi-year site-weight averages.
Voluntary Trip Reports (VTRs)	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Encounter data for non-Chinook species (e.g., Coho) that the angler may record on the VTR form	Fish encounter	Season (3 months)	VTR data were used in the estimation of total Area 11 Chinook encounters by size/mark group (LM=33%, LU=9%, SM=51%, SU=7%; Table 6.5) and associated impacts.
Overall Fishery Impacts Estimation	Total Chinook encounters and mortalities, by size/mark-status group	Ratios of encounters and mortalities per kept Chinook	N/A	Season (3 months)	Estimated on a monthly time step but considered at the season-total level.
Coded-wire tag (CWT) Impacts Estimation	Marked/unmarked double-index tag (DIT) encounters and mortalities	N/A	N/A	Season (3 months)	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

¹The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.

Table 6.2 Estimates of total fishing effort and total salmon catch (harvest and releases) during the Area 11 Chinook MSF from February 1 - April 30, 2013. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Est. Total Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
Feb	5	1-Feb	3-Feb	106	159	5	0	8	3	16
	6	4-Feb	10-Feb	43	53	0	0	0	0	0
	7	11-Feb	17-Feb	74	120	4	0	6	2	11
	8	18-Feb	24-Feb	56	86	3	0	4	1	9
	9	25-Feb	3-Mar	159	259	29	0	43	14	86
Mar	10	4-Mar	10-Mar	124	184	6	0	9	3	18
	11	11-Mar	17-Mar	52	77	6	0	9	3	19
	12	18-Mar	24-Mar	97	147	12	0	18	6	36
	13	25-Mar	31-Mar	149	309	3	0	4	1	9
Apr	14	1-Apr	7-Apr	79	123	23	0	35	11	69
	15	8-Apr	14-Apr	94	162	28	0	42	13	84
	16	15-Apr	21-Apr	115	183	33	0	50	16	99
	17	22-Apr	28-Apr	156	263	20	0	30	9	59
	18	29-Apr	30-Apr	12	15	0	0	0	0	0
Area 11 Season Total:				1,316	2,141	171	0	259	83	513
Variance:				14,975	29,742	1,116	0	8,595	648	17,001
SE:				122	172	33	0	93	25	130
CV (%):				9.3%	8.1%	19.5%	-	35.7%	30.8%	25.4%
95% CI:				1,076-1,555	1,803-2,479	106-237	-	78-441	33-132	258-769

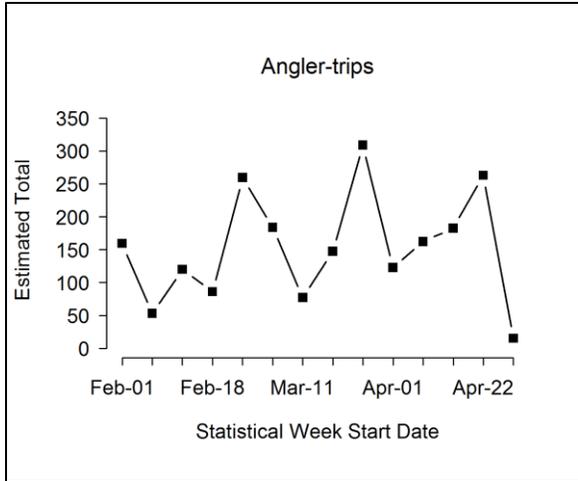


Figure 6.1 Temporal patterns in fishing effort during the Area 11 Chinook MSF from February 1 - April 30, 2013.

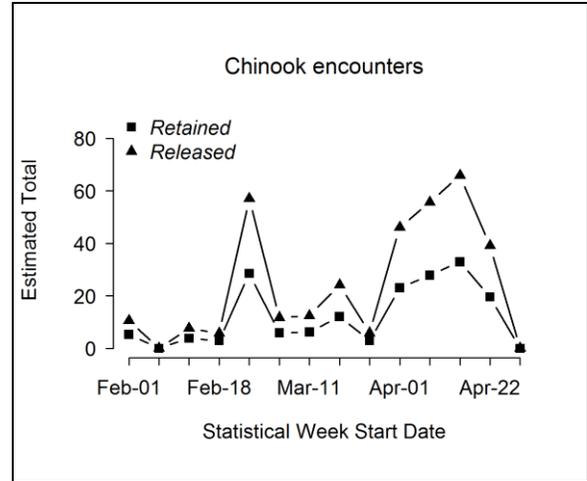


Figure 6.3 Temporal patterns in Chinook encounters (number retained and released) during the Area 11 Chinook MSF from February 1 - April 30, 2013.

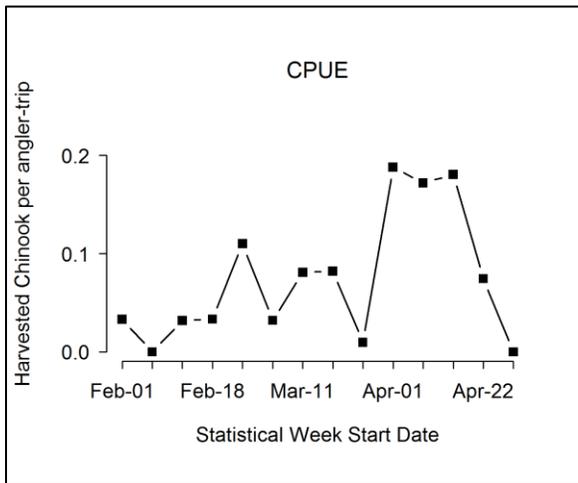


Figure 6.2 Temporal patterns in CPUE (number of Chinook landed per angler trip) during the Area 11 Chinook MSF from February 1 - April 30, 2013.

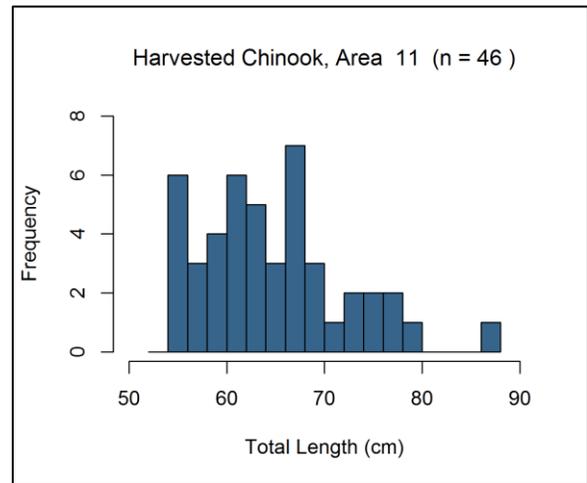


Figure 6.4 Length-frequency distributions of retained marked Chinook sampled in dockside angler interviews during the Area 11 Chinook MSF from February 1 - April 30, 2013.

Table 6.3 Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the Area 11 Chinook MSF from February 1 - April 30, 2013.

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	40	6	46
Unmarked	0	0	0
Total	40	6	46

Table 6.4 Summary of CWTs recovered from Chinook salmon harvested during the Area 11 Chinook MSF from February 1 - April 30, 2013. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	Number DITs
Washington (100%)	Southern Puget Sound (25%)	Clear Cr - 11.0013C	Clear Creek Hatchery	1 (100%)	1
Total				1	1

Table 6.5 Total Chinook encountered (retained and released) by private-boat anglers logging their trips on VTRs during the Area 11 Chinook MSF from February 1 - April 30, 2013, with estimates of legal-size and overall (legal and sublegal) mark rates. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private VTR	50 1-trip VTRs, 79 Angler Trips	29	8	44	6	87	0.84	0.78
Size/mark-status composition:		0.33	0.09	0.51	0.07			
Variance:		(0.0026)	(0.0010)	(0.0029)	(0.0007)			

Table 6.6 Summary of season-wide fishery impact estimates for the Area 11 Chinook MSF from February 1 - April 30, 2013. Release mortality rate = 0.15 for legal fish and 0.20 for sublegal fish. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	171	149	22	3	152	992	31	90 - 214	21
Legal UM	47	0	47	7	7	9	3	1 - 13	41
Sublegal AD	260	22	237	47	70	296	17	36 - 104	25
Sublegal UM	35	0	35	7	7	11	3	1 - 13	46
Total	513	171	342	65	236	1,307	36	165 - 307	15

Table 6.7 Comparison of modeled (FRAM model run 1512) and estimated total Chinook encounters for the Area 11 Chinook MSF from February 1 - April 30, 2013. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	526	106	420	4
	AD	2,053	383	1,670	333
	Total	2,579	489	2,090	337
	% Marked	80	78	80	99
Estimated (Creel) Encounters	UM	83	47	35	0
	AD	431	171	260	171
	Total	513	218	295	171
	% Marked	84	78	88	100

Table 6.8 Comparison of modeled (FRAM model run 1512) and estimated total Chinook mortalities for the Area 11 Chinook MSF from February 1 - April 30, 2013. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	103	691	794	14	222	236
Released Legal	15	24	39	7	3	10
Released Sublegal	84	334	418	7	47	55
Landed Only	4	333	337	0	171	171

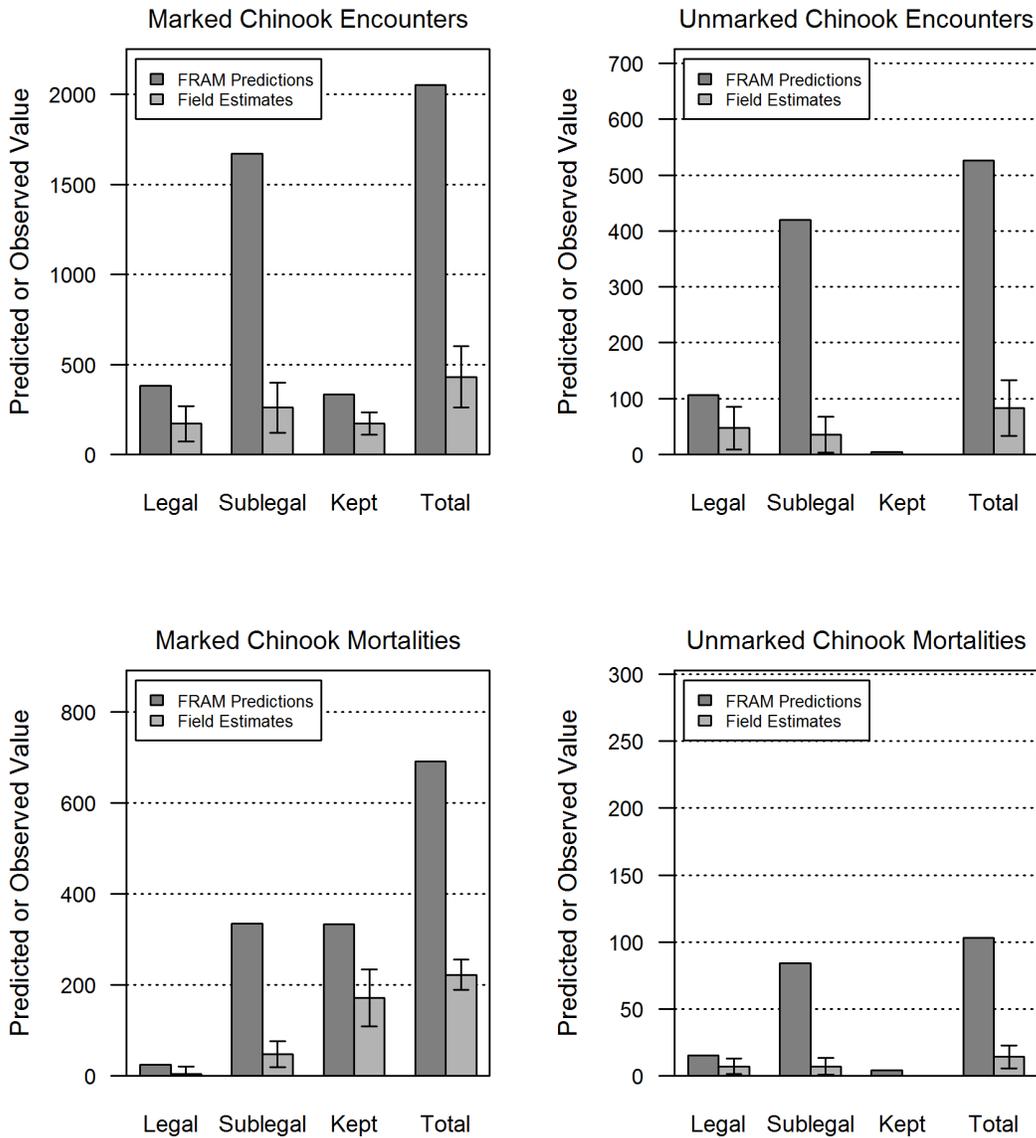


Figure 6.5 Comparison of modeled (FRAM model run 1512) and estimated total Chinook encounters and mortalities for the Area 11 Chinook MSF from February 1 - April 30, 2013. Error bars represent approximate 95% confidence intervals for field estimates.

Table 6.9 Summary of double-index tagged (DIT) Chinook kept by anglers, and estimated total mortality of unmarked DIT Chinook due to hook-and-release impacts resulting from the Area 11 Chinook MSF from February 1 - April 30, 2013. AD = marked (adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs'd	AD DIT Harvest		UM DIT Enc.	UM DIT Mortality		
			Est.	var(Est.)		Est.	var(Est.)	SE(Est.)
Clear Creek Hatchery	2010	1	3.7	10.1	3.8	0.4	0.107	0.3
Total		1	3.7	10.1	3.8	0.4	0.107	0.3

Table 6.10 Monthly sample rates (Total retained Chinook sampled / Estimated retained Chinook) in the Area 11 Chinook MSF from February 1 - April 30, 2013. AD = marked (adipose-clipped), UM = unmarked.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
February	5-9	1 Feb - 3 Mar	41	0	41	10	0	10	24.7%
March	10-13	4 Mar - 31 Mar	27	0	27	13	0	13	47.9%
April	14-18	1 Apr - 30 Apr	104	0	104	23	0	23	22.2%
Season Total			171	0	171	46	0	46	26.9%

Table 6.11 Fishery total estimates of retained and released salmon (*other than Chinook salmon*) for the area 11 Chinook MSF from February 1 – April 30, 2013. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark-status. Values may not add exactly due to rounding error.

Month	Week	Start Date	End Date	Released Salmon				
				Coho AD	Coho UM	Coho UK	Cutthroat Trout	Unknown Salmonid
Feb	5	1-Feb	3-Feb	0	0	7	14	0
	6	4-Feb	10-Feb	0	0	0	0	0
	7	11-Feb	17-Feb	0	0	0	0	0
	8	18-Feb	24-Feb	0	0	0	0	0
	9	25-Feb	3-Mar	0	0	0	0	0
Mar	10	4-Mar	10-Mar	0	0	0	0	0
	11	11-Mar	17-Mar	0	0	0	0	0
	12	18-Mar	24-Mar	0	0	0	0	0
	13	25-Mar	31-Mar	0	0	0	0	173
Apr	14	1-Apr	7-Apr	0	0	0	0	0
	15	8-Apr	14-Apr	0	0	0	0	0
	16	15-Apr	21-Apr	0	0	0	0	0
	17	22-Apr	28-Apr	0	0	0	0	0
	18	29-Apr	30-Apr	0	0	0	0	0
Area 11 Season Total:				0	0	7	14	173
Variance:				0	0	40	161	27,393
Standard Error:				0	0	6	13	166
CV (%):				-	-	89%	89%	96%
95% CI:				-	-	0-20	0-39	0-497

Table 6.12 Summary of the total number of anglers intercepted in Area 11 during on-the-water surveys conducted from February 1 – April 30, 2013. Sites in bold represent those included in the dockside sample frame.

Site Name	Total Anglers	Season Total (unadjusted) Size Measure
Armeni Public Ramp	5	0.068
Dockton Ramp	1	0.014
Foss Harbor Marina	11	0.149
Gig Harbor Ramp	3	0.041
Narrows Marina	4	0.054
Point Defiance Boathouse	19	0.257
Point Defiance Public Ramp	21	0.284
Private	5	0.068
Solo Point	2	0.027
Tacoma Outboard Association	3	0.041
Total Anglers	74	1.000

Table 6.13 Season-total estimates of Chinook encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Area 11 winter Chinook MSF. Values may not add exactly due to rounding error.

Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
		LM	LU	SM	SU	LM	LU	SM	SU	
Feb 1 - Apr 30, 2010	3,096	315	3	11	0	47	80	114	10	580
Feb 1 - Apr 30, 2011	1,515	78	3	9	0	12	87	322	241	752
Feb 1 - Apr 30, 2012	1,937	170	0	4	0	25	142	630	182	1,153
Feb 1 - Apr 30, 2013	2,141	149	0	22	0	22	47	237	35	513

7) Marine Area 12 Winter Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a fourth consecutive winter Chinook MSF in Marine Area 12 from October 1 – December 31, 2012 and February 1 – April 30, 2013. Data collection methods used to monitor the Area 12 Chinook MSF included dockside angler interviews (with catch sampling) and voluntary trip reports provided by private anglers. From these activities, we were able to estimate catch rates (CPUE), mark rates (based on VTRs), and landed-catch composition (age, length, and CWT). Additionally, we described relative catch and effort patterns throughout the season based on the assumption that baseline-sampling observations of these parameters are good indicators of associated fishery-wide trends.

WDFW dockside samplers conducted “Baseline Sampling” at selected access sites during the 2012-13 winter Chinook MSF in Area 12. Complete details of these methods are presented in a separate Methods Report (WDFW 2012a). Briefly, Baseline Sampling is opportunistic in nature, with overall sampling effort allocated across space and time in a manner that maximizes the number of angler interviews obtained per sample effort. The Area 12 baseline sample frame included 16 different access sites (**Table 7.1**), and a total of 133 site visits during the six-month season. Site visits ranged from short (e.g., “no effort” samples) to full-day (8+ hours) sampling events. When present, samplers interviewed all anglers exiting the Area 12 fishery at the selected access site. The interview and catch-sampling procedures employed were identical to those used in other MSFs. Thus, Area 12 samplers acquired information about: 1) angling effort (boat and angler trips, trip length), 2) encounters composition (retained and/or released) by species and mark status (marked vs. unmarked, Chinook and Coho salmon only), and 3) landed Chinook size (fork and total length) and age (scales were collected and ultimately read) composition. Samplers also inspected landed Chinook and Coho salmon for CWTs using wand detectors and acquired snouts when tags were present; resulting tag data were used to estimate the CWT-based composition (unexpanded) of landed catch.

In contrast to the intensive “Murthy” survey design employed in other areas, Area 12 sampling results could not be used to produce fishery-total estimates of effort, encounters (retained catch + releases), and unmarked-DIT Chinook impacts. It should be noted, however, that Area 12 baseline sampling observations will ultimately (one to two years from the close of the fishery) be combined with Catch Record Card (CRC) data to estimate catch and effort at the fishery-total level, by month. Thus, while these descriptors of MSF impacts are not presented in the present document, they will be available at a future time.

In this section we report results from monitoring the Area 12 winter Chinook MSF based on our efficient, streamlined reporting format agreed-to between state and tribal technical representatives (in July 2010), which is focused on presenting data tables and figures rather than interpretive text. Results are presented in a series of tables and figures according to the following sequence: *i*) the intensity (spatial and temporal coverage) of sampling efforts is described; and *ii*) observed data on fishery characteristics obtained from the dockside baseline sampling efforts, including catch and effort observations, Chinook length-frequency data, and CWT recovery results.

Table 7.1 List of sites sampled with the number of sampling events (site-days) during the Area 12 Chinook MSF from October 1 – December 31, 2012 and February 1 - April 30, 2013.

Location	Number of Site-Days Sampled per Month						Total Site-Days	% of Total
	October	November	December	February	March	April		
Hood Canal Public Ramp (Tacoma Light)	5	0	0	3	3	1	12	9.0%
Misery Point Ramp	12	3	7	15	15	12	64	48.1%
Pleasant Harbor Marina	0	0	0	0	3	0	3	2.3%
Pleasant Harbor Boat Ramp (WDFW)	0	0	4	3	11	2	20	15.0%
Point Whitney Ramp	0	0	2	1	0	0	3	2.3%
Quilcene Bay Ramp	0	0	0	0	0	1	1	0.8%
Salsbury County Park Ramp	0	0	2	3	5	1	11	8.3%
Seabeck Harbor (Marina)	0	0	0	0	1	0	1	0.8%
Tahuya Ramp	5	0	0	0	0	0	5	3.8%
Union Ramp	0	1	0	0	1	0	2	1.5%
Private Residence	0	0	2	0	0	0	2	1.5%
Hood Canal Marina (Union)	1	0	0	0	0	0	1	0.8%
Triton Cove	0	0	0	0	1	0	1	0.8%
Hoodsport Shore	1	0	0	0	0	0	1	0.8%
Big Beef Beach	2	0	0	0	0	0	2	1.5%
Dewatto Creek Watch	3	1	0	0	0	0	4	3.0%
Grand Total	29	5	17	25	40	17	133	100.0%

Table 7.2 Observations of fishing effort, salmon harvest, and reported salmon releases, by week, for the Area 12 Chinook MSF from October 1 – December 31, 2012 and February 1 - April 30, 2013. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark-status.

Stat Week	Start Date	End Date	Effort		Retained Fish				Released Fish								
			Boats	Anglers	Chinook		Coho		Chinook			Coho			Chum	Cutthroat Trout	Unknown Salmon
					AD	UM	AD	UM	AD	UM	UK	AD	UM	UK			
41	1-Oct	7-Oct	46	88	1	0	10	2	0	0	1	4	4	2	1	5	0
42	8-Oct	14-Oct	9	14	0	0	5	0	0	0	0	0	0	0	0	8	0
43	15-Oct	21-Oct	11	15	0	0	1	0	0	0	0	0	0	1	3	0	0
44	22-Oct	28-Oct	11	22	0	0	5	0	0	0	4	0	4	0	2	0	0
45	29-Oct	4-Nov	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0
46	5-Nov	11-Nov	4	8	0	0	0	0	0	0	0	0	0	0	0	0	1
47	12-Nov	18-Nov	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	19-Nov	25-Nov	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
49	26-Nov	2-Dec	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0
50	3-Dec	9-Dec	4	6	3	0	0	0	5	1	0	0	0	0	0	0	0
51	10-Dec	16-Dec	6	8	3	0	0	0	21	2	3	0	0	0	0	0	0
52	17-Dec	23-Dec	7	11	4	0	0	0	6	4	5	0	0	0	0	0	0
53	24-Dec	30-Dec	36	72	29	0	0	0	172	32	13	0	0	0	0	0	0
54	31-Dec	31-Dec	6	13	2	0	0	0	7	1	13	0	0	0	0	0	0
5	1-Feb	3-Feb	32	71	21	0	0	0	68	5	32	0	0	0	0	0	0
6	4-Feb	10-Feb	27	48	8	0	0	0	31	6	42	0	0	0	0	8	0
7	11-Feb	17-Feb	76	180	31	0	0	0	41	10	20	0	0	0	0	0	0
8	18-Feb	24-Feb	11	20	1	0	0	0	7	0	0	0	0	0	0	0	0
9	25-Feb	3-Mar	33	71	29	0	0	0	18	6	25	0	0	0	0	0	0
10	4-Mar	10-Mar	27	51	15	0	0	0	13	7	9	0	0	0	0	0	0
11	11-Mar	17-Mar	18	33	6	0	0	0	15	2	0	0	0	0	0	0	0
12	18-Mar	24-Mar	15	29	3	0	0	0	4	0	10	0	0	0	0	11	0
13	25-Mar	31-Mar	21	38	7	0	0	0	4	0	4	0	4	0	0	7	0
14	1-Apr	7-Apr	8	15	0	0	0	0	1	3	0	0	0	0	0	0	0
15	8-Apr	14-Apr	4	6	0	0	0	0	0	0	0	0	0	0	0	0	0
16	15-Apr	21-Apr	42	98	18	0	0	0	26	5	10	0	0	0	0	0	0
17	22-Apr	28-Apr	13	22	1	0	0	0	0	1	0	0	0	0	0	11	0
18	29-Apr	30-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Season Total:			470	947	182	0	21	2	439	85	191	4	12	3	6	50	1

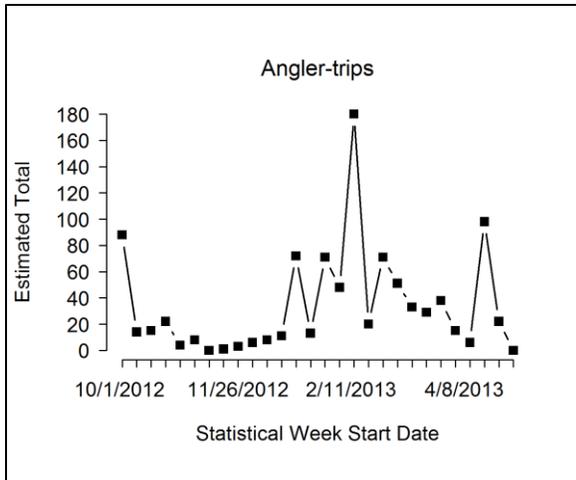


Figure 7.1 Temporal patterns in fishing effort during the Area 12 Chinook MSF from October 1 – December 31, 2012 and February 1 - April 30, 2013. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates.

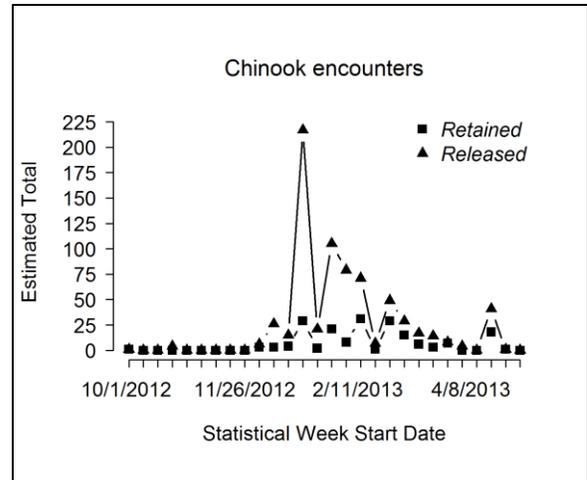


Figure 7.3 Temporal patterns in Chinook encounters (number retained and released) during the Area 12 Chinook MSF from October 1 – December 31, 2012 and February 1 - April 30, 2013. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates.

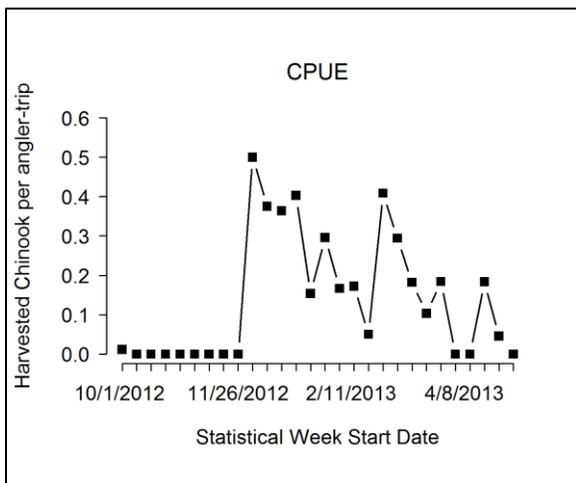


Figure 7.2 Temporal patterns in CPUE (number of Chinook landed per angler trip) during the Area 12 Chinook MSF from October 1 – December 31, 2012 and February 1 - April 30, 2013. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates.

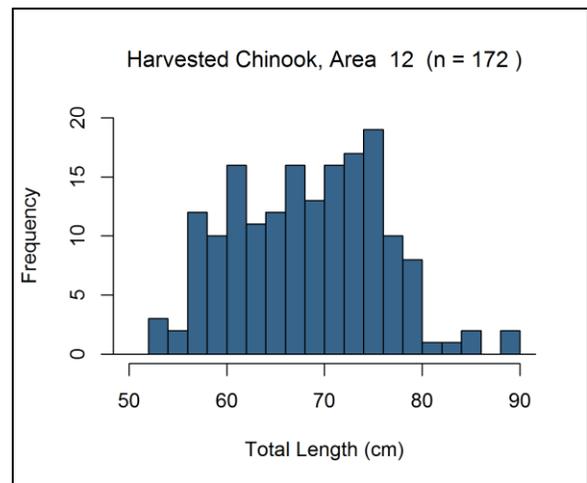


Figure 7.4 Length-frequency distributions of retained marked Chinook sampled in dockside angler interviews during the Area 12 Chinook MSF from October 1 – December 31, 2012 and February 1 - April 30, 2013.

Table 7.3 Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the Area 12 Chinook MSF from October 1 – December 31, 2012 and February 1 - April 30, 2013.

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	166	6	172
Unmarked	0	0	0
Total	166	6	172

Table 7.4 Summary of CWTs recovered from Chinook salmon harvested during the Area 12 Chinook MSF from October 1 – December 31, 2012 and February 1 - April 30, 2013. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	Number DITs
British Columbia (33.3%)	Fraser R – Thompson R (33.3%)	Harrison River	Chehalis River H	1 (33.3%)	0
Washington (66.7%)	Northern Washington (33.3%)	Friday Cr - 03.0017	Samish Hatchery	1 (33.3%)	1
	Hood Canal (33.3%)	Finch Cr - 16.0222	Hoodsport Hatchery	1 (33.3%)	0
Total				3	1

Table 7.5 Total Chinook encountered (retained and released) by private-boat anglers logging their trips on VTRs during the Area 12 Chinook MSF from October 1 – December 31, 2012 and February 1 - April 30, 2013, with estimates of legal-size and overall (legal and sublegal) mark rates. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private VTR	23 1-trip VTRs, 45 Angler Trips	21	0	52	2	75	0.97	1.00
Size/mark-status composition:		0.28	0.00	0.69	0.03			
Variance:		(0.0027)	(0.0000)	(0.0029)	(0.0004)			

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REFERENCES

- Conrad, R., and P. McHugh. 2008. Assessment of Two Methods for Estimating Total Chinook Salmon Encounters in Puget Sound/Strait of Juan de Fuca Mark-Selective Chinook Fisheries. Northwest Fishery Resource Bulletin Manuscript Series No. 2. <http://wdfw.wa.gov/publications/00492/>
- Puget Sound Indian Tribes and WDFW. 2004. Comprehensive Management Plan for Puget Sound Chinook: Harvest Management Component. Olympia, WA. 253 pp.
- Puget Sound Indian Tribes and WDFW. 2010. Comprehensive Management Plan for Puget Sound Chinook: Harvest Management Component. Olympia, WA. 230 pp.
- Thiesfeld, S.L., and A. Hagen-Breaux. 2005a. 2003 Chinook Selective Fishery, Marine Areas 5 and 6. January 12, 2005. Washington Department of Fish and Wildlife. Olympia, Washington. <http://wdfw.wa.gov/publications/00913/>
- Thiesfeld, S.L., and A. Hagen-Breaux. 2005b. 2004 Chinook Selective Fishery, Marine Areas 5 and 6. January 14, 2005. Washington Department of Fish and Wildlife. Olympia, Washington. <http://wdfw.wa.gov/publications/00914/>
- Thiesfeld, S.L., and A. Hagen-Breaux. 2006. 2005 Chinook Selective Fishery, Marine Areas 5 and 6. March 21, 2006. Washington Department of Fish and Wildlife, Olympia, Washington. <http://wdfw.wa.gov/publications/00915/>
- Washington Department of Fish and Wildlife (WDFW). 2007a. Marine Areas 9 and 10 Selective Chinook Fishery, July 16-31, 2007: Post-season Report. Draft Report: October 3, 2007. Washington Department of Fish and Wildlife. Olympia, Washington. 82 pp. <http://wdfw.wa.gov/publications/00493/>
- Washington Department of Fish and Wildlife (WDFW). 2007b. Marine Areas 11 and 13 Selective Chinook Fishery, 2007: Post-season Report. Draft Report: October 30, 2007. Washington Department of Fish and Wildlife. Olympia, Washington. 80 pp. <http://wdfw.wa.gov/publications/00494/>
- Washington Department of Fish and Wildlife (WDFW). 2008a. A Multi-year Assessment of the Marine Areas 5 and 6 Selective Chinook Fishery: 2003-2007. Final Report Draft: March 14, 2008. Washington Department of Fish and Wildlife. Olympia, Washington. 177 pp. <http://wdfw.wa.gov/publications/00495/>
- Washington Department of Fish and Wildlife (WDFW). 2008b. A Multi-year Assessment of the Marine Areas 8-1 and 8-2 Selective Chinook Fishery: 2005-2007. Final Report Draft: February 25, 2008. Washington Department of Fish and Wildlife. Olympia, Washington. 149 pp. <http://wdfw.wa.gov/publications/00496/>
- Washington Department of Fish and Wildlife (WDFW). 2009a. Marine Area 7 Mark-Selective Recreational Chinook Fishery, February 1-29, 2008: Post-season Report. Revised Draft Report: February 20, 2009. Washington Department of Fish and Wildlife. Olympia, Washington. 47 pp. <http://wdfw.wa.gov/publications/00491/>
- Washington Department of Fish and Wildlife (WDFW). 2009b. Marine Areas 8-1 and 8-2 Mark-Selective Recreational Chinook Fishery, November 1, 2007-April 30 2008. Revised Draft Report: February 20, 2009. Washington Department of Fish and Wildlife. Olympia, Washington. 62 pp. <http://wdfw.wa.gov/publications/00486/>

- Washington Department of Fish and Wildlife (WDFW). 2009c. Marine Area 9 Mark-Selective Recreational Chinook Fishery, January 16 – April 15, 2008 Post-season Report: Revised Draft Report: February 20, 2009. Washington Department of Fish and Wildlife. Olympia, Washington. 49 pp. <http://wdfw.wa.gov/publications/00490/>
- Washington Department of Fish and Wildlife (WDFW). 2009d. Marine Area 10 Mark-Selective Recreational Chinook Fishery, January 16 – April 15, 2008 Post-season Report: Revised Draft Report: February 23, 2009. Washington Department of Fish and Wildlife. Olympia, Washington. 47 pp. <http://wdfw.wa.gov/publications/00489/>
- Washington Department of Fish and Wildlife (WDFW). 2009e. Marine Areas 5 and 6 Mark-Selective Recreational Chinook Fishery, Summer 2008: Post-season Report. Revised Draft Report: February 17, 2009. Washington Department of Fish and Wildlife. Olympia, Washington. 64 pp. <http://wdfw.wa.gov/publications/00485/>
- Washington Department of Fish and Wildlife (WDFW). 2009f. Marine Areas 9 and 10 Mark-Selective Recreational Chinook Fishery, July 16-August 15, 2008. Revised Draft Report: February 23, 2009. Washington Department of Fish and Wildlife. Olympia, Washington. 60 pp. <http://wdfw.wa.gov/publications/00487/>
- Washington Department of Fish and Wildlife (WDFW). 2009g. Marine Areas 11 and 13 Mark-Selective Recreational Chinook Fishery, Summer 2008. Revised Draft Report: February 24, 2009. Washington Department of Fish and Wildlife. Olympia, Washington. 64 pp. <http://wdfw.wa.gov/publications/00488/>
- Washington Department of Fish and Wildlife (WDFW). 2010a. Marine Area 7 Mark-Selective Recreational Chinook Fishery, February 1–April 15, 2009: Post-season Report. Revised Draft Report: June 11, 2010. Washington Department of Fish and Wildlife. Olympia, Washington. 50 pp. <http://wdfw.wa.gov/publications/01060/>
- Washington Department of Fish and Wildlife (WDFW). 2010b. Marine Areas 8-1 and 8-2 Mark-Selective Recreational Chinook Fishery, January 1-April 30, 2009: Post-season Report. Revised Draft Report: June 14, 2010. Washington Department of Fish and Wildlife. Olympia, Washington. 62 pp. <http://wdfw.wa.gov/publications/01061/>
- Washington Department of Fish and Wildlife (WDFW). 2010c. Marine Area 9 Mark-Selective Recreational Chinook Fishery, November 1-30, 2008 and January 16-April 15, 2009: Post-season Report. Revised Draft Report: June 15, 2010. Washington Department of Fish and Wildlife. Olympia, Washington. 50 pp. <http://wdfw.wa.gov/publications/01062/>
- Washington Department of Fish and Wildlife (WDFW). 2010d. Marine Area 10 Mark-Selective Recreational Chinook Fishery, December 1, 2008–January 31, 2009, Post-season Report. Revised Draft Report: June 17, 2010. Washington Department of Fish and Wildlife. Olympia, Washington. 48 pp. <http://wdfw.wa.gov/publications/01059/>
- Washington Department of Fish and Wildlife (WDFW). 2010e. Marine Areas 5 and 6 Mark-Selective Recreational Chinook Fishery, Summer 2009: Post-season Report. Revised Draft Report: June 29, 2010. Washington Department of Fish and Wildlife. Olympia, Washington. 61 pp. <http://wdfw.wa.gov/publications/01058/>

- Washington Department of Fish and Wildlife (WDFW). 2010f. Marine Areas 9 and 10 Mark-Selective Recreational Chinook Fishery, Summer 2009: Post-season Report. Revised Draft Report: June 28, 2010. Washington Department of Fish and Wildlife. Olympia, Washington. 64 pp. <http://wdfw.wa.gov/publications/01057/>
- Washington Department of Fish and Wildlife (WDFW). 2010g. Marine Areas 11 and 13 Mark-Selective Recreational Chinook Fishery, Summer 2009: Post-season Report. Revised Draft Report: June 21, 2010. Washington Department of Fish and Wildlife. Olympia, Washington. 63 pp. <http://wdfw.wa.gov/publications/01056/>
- Washington Department of Fish and Wildlife (WDFW). 2011a. 2009-2010 Winter Mark-Selective Recreational Chinook Fisheries in Marine Areas 7, 8-1, 8-2, 9, 10, 11, and 12: Post-season Report. Revised Draft Report: March 31, 2011. Washington Department of Fish and Wildlife. Olympia, Washington. 93 pp. <http://wdfw.wa.gov/publications/01372/>
- Washington Department of Fish and Wildlife (WDFW). 2011b. 2010 Summer Mark-Selective Recreational Chinook Fisheries in Marine Areas 5, 6, 9, 10, 11, and 13: Post-season Report. Revised Draft Report: March 25, 2011. Washington Department of Fish and Wildlife. Olympia, Washington. 88 pp. <http://wdfw.wa.gov/publications/01373/>
- Washington Department of Fish and Wildlife (WDFW). 2012a. Methods Report: Monitoring Mark-Selective Recreational Chinook Fisheries In the Marine Catch Areas of Puget Sound (Areas 5 through 13). Revised Draft Report: January 30, 2012. Washington Department of Fish and Wildlife. Olympia, Washington. 81 pp. <http://wdfw.wa.gov/publications/01357/>
- Washington Department of Fish and Wildlife (WDFW). 2012b. 2010-2011 Winter Mark-Selective Recreational Chinook Fisheries In Marine Areas 7, 8-1, 8-2, 9, 10, 11 and 12: Post-season Report. Revised Draft Report: October 31, 2012. Washington Department of Fish and Wildlife. Olympia, Washington. 98 pp. <http://wdfw.wa.gov/publications/01435/>
- Washington Department of Fish and Wildlife (WDFW). 2012c. 2011 Summer Mark-Selective Recreational Chinook Fisheries In Marine Areas 5, 6, 9, 10, 11 and 13: Post-season Report. Revised Draft Report: November 13, 2012. Washington Department of Fish and Wildlife. Olympia, Washington. 89 pp. <http://wdfw.wa.gov/publications/01438/>
- Washington Department of Fish and Wildlife (WDFW). 2013a. 2011-2012 Winter Mark-Selective Recreational Chinook Fisheries In Marine Areas 7, 8-1, 8-2, 9, 10, 11 and 12 (Revised Draft Post-season Report; January 24, 2013). Washington Department of Fish and Wildlife. Olympia, Washington. 90 pp. <http://wdfw.wa.gov/publications/01533/>
- Washington Department of Fish and Wildlife (WDFW). 2013b. 2012 Summer Mark-Selective Recreational Chinook Fisheries In Marine Areas 5, 6, 9, 10, 11, 12 and 13 (Revised Draft Post-season Report; February 26, 2013). Washington Department of Fish and Wildlife. Olympia, Washington. 91 pp. <http://wdfw.wa.gov/publications/01534/>
- Washington Department of Fish and Wildlife (WDFW) and Northwest Indian Fisheries Commission (NWIFC). 2012. 2012-13 Co-managers' List of Agreed Fisheries. Olympia, Washington.

APPENDICES

Appendix A.1 Size measures by sample date, for sites sampled during dockside creel surveys in the Area 8-1 mark-selective Chinook fishery from November 1, 2012 through April 30, 2013.

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
11/1/2012	45	Camano Island State Park Public Ramp	0.2690	Maple Grove Ramp; Camano Is	0.2298
11/2/2012	45	Camano Island State Park Public Ramp	0.2690	Oak Harbor Marina & Public Ramp	0.2996
11/3/2012	45	Camano Island State Park Public Ramp	0.2690	Coupeville Public Ramp	0.0939
11/5/2012	46	Camano Island State Park Public Ramp	0.2690	Maple Grove Ramp; Camano Is	0.2298
11/9/2012	46	Camano Island State Park Public Ramp	0.2690	Maple Grove Ramp; Camano Is	0.2298
11/10/2012	46	Camano Island State Park Public Ramp	0.2690	Oak Harbor Marina & Public Ramp	0.2996
11/13/2012	47	Camano Island State Park Public Ramp	0.2690	Norton Street (Everett) Ramp	0.0886
11/16/2012	47	Camano Island State Park Public Ramp	0.2690	Norton Street (Everett) Ramp	0.0886
11/17/2012	47	Camano Island State Park Public Ramp	0.2690	Oak Harbor Marina & Public Ramp	0.2996
11/19/2012	48	Camano Island State Park Public Ramp	0.2690	Oak Harbor Marina & Public Ramp	0.2996
11/24/2012	48	Camano Island State Park Public Ramp	0.2690	Oak Harbor Marina & Public Ramp	0.2996
11/25/2012	48	Camano Island State Park Public Ramp	0.2690	Maple Grove Ramp; Camano Is	0.2298
11/28/2012	49	Camano Island State Park Public Ramp	0.2690	Oak Harbor Marina & Public Ramp	0.2996
12/1/2012	49	Camano Island State Park Public Ramp	0.1511	Utsalady Ramp; Camano Is	0.0515
12/2/2012	49	Camano Island State Park Public Ramp	0.1511	Oak Harbor Marina & Public Ramp	0.2713
12/5/2012	50	Camano Island State Park Public Ramp	0.1511	Norton Street (Everett) Ramp	0.2443
12/7/2012	50	Camano Island State Park Public Ramp	0.1511	Maple Grove Ramp; Camano Is	0.1811
12/8/2012	50	Camano Island State Park Public Ramp	0.1511	Oak Harbor Marina & Public Ramp	0.2713
12/12/2012	51	Camano Island State Park Public Ramp	0.1511	Maple Grove Ramp; Camano Is	0.1811
12/15/2012	51	Camano Island State Park Public Ramp	0.1511	Oak Harbor Marina & Public Ramp	0.2713
12/16/2012	51	Camano Island State Park Public Ramp	0.1511	Maple Grove Ramp; Camano Is	0.1811
12/19/2012	52	Camano Island State Park Public Ramp	0.1511	Oak Harbor Marina & Public Ramp	0.2713
12/22/2012	52	Camano Island State Park Public Ramp	0.1511	Maple Grove Ramp; Camano Is	0.1811
12/23/2012	52	Camano Island State Park Public Ramp	0.1511	Oak Harbor Marina & Public Ramp	0.2713
12/27/2012	53	Camano Island State Park Public Ramp	0.1511	Oak Harbor Marina & Public Ramp	0.2713
12/28/2012	53	Camano Island State Park Public Ramp	0.1511	Utsalady Ramp; Camano Is	0.0515
1/3/2013	1	Camano Island State Park Public Ramp	0.4682	Norton Street (Everett) Ramp	0.1168
1/5/2013	1	Camano Island State Park Public Ramp	0.4682	Oak Harbor Marina & Public Ramp	0.1294
1/6/2013	1	Camano Island State Park Public Ramp	0.4682	Maple Grove Ramp; Camano Is	0.1612
1/8/2013	2	Camano Island State Park Public Ramp	0.4682	Maple Grove Ramp; Camano Is	0.1612
1/11/2013	2	Camano Island State Park Public Ramp	0.4682	Oak Harbor Marina & Public Ramp	0.1294
1/12/2013	2	Camano Island State Park Public Ramp	0.4682	Utsalady Ramp; Camano Is	0.0687
1/16/2013	3	Camano Island State Park Public Ramp	0.4682	Norton Street (Everett) Ramp	0.1168

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
1/18/2013	3	Camano Island State Park Public Ramp	0.4682	Maple Grove Ramp; Camano Is	0.1612
1/19/2013	3	Camano Island State Park Public Ramp	0.4682	Norton Street (Everett) Ramp	0.1168
1/24/2013	4	Camano Island State Park Public Ramp	0.4682	Maple Grove Ramp; Camano Is	0.1612
1/25/2013	4	Camano Island State Park Public Ramp	0.4682	Norton Street (Everett) Ramp	0.1168
1/26/2013	4	Camano Island State Park Public Ramp	0.4682	Oak Harbor Marina & Public Ramp	0.1294
1/30/2013	5	Camano Island State Park Public Ramp	0.4682	Oak Harbor Marina & Public Ramp	0.1294
2/1/2013	5	Camano Island State Park Public Ramp	0.443	Norton Street (Everett) Ramp	0.0790
2/3/2013	5	Camano Island State Park Public Ramp	0.443	Oak Harbor Marina & Public Ramp	0.1361
2/7/2013	6	Camano Island State Park Public Ramp	0.443	Maple Grove Ramp; Camano Is	0.2259
2/8/2013	6	Camano Island State Park Public Ramp	0.443	Norton Street (Everett) Ramp	0.0790
2/10/2013	6	Camano Island State Park Public Ramp	0.443	Maple Grove Ramp; Camano Is	0.2259
2/12/2013	7	Camano Island State Park Public Ramp	0.443	Oak Harbor Marina & Public Ramp	0.1361
2/16/2013	7	Camano Island State Park Public Ramp	0.443	Oak Harbor Marina & Public Ramp	0.1361
2/17/2013	7	Camano Island State Park Public Ramp	0.443	Oak Harbor Marina & Public Ramp	0.1361
2/19/2013	8	Camano Island State Park Public Ramp	0.443	Maple Grove Ramp; Camano Is	0.2259
2/23/2013	8	Camano Island State Park Public Ramp	0.443	Maple Grove Ramp; Camano Is	0.2259
2/24/2013	8	Camano Island State Park Public Ramp	0.443	Oak Harbor Marina & Public Ramp	0.1361
2/27/2013	9	Camano Island State Park Public Ramp	0.443	Utsalady Ramp; Camano Is	0.0727
3/2/2013	9	Camano Island State Park Public Ramp	0.4824	Maple Grove Ramp; Camano Is	0.2000
3/3/2013	9	Camano Island State Park Public Ramp	0.4824	Maple Grove Ramp; Camano Is	0.2000
3/6/2013	10	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
3/8/2013	10	Camano Island State Park Public Ramp	0.4824	Maple Grove Ramp; Camano Is	0.2000
3/9/2013	10	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
3/13/2013	11	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
3/15/2013	11	Camano Island State Park Public Ramp	0.4824	Maple Grove Ramp; Camano Is	0.2000
3/17/2013	11	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
3/21/2013	12	Camano Island State Park Public Ramp	0.4824	Maple Grove Ramp; Camano Is	0.2000
3/22/2013	12	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
3/24/2013	12	Camano Island State Park Public Ramp	0.4824	Maple Grove Ramp; Camano Is	0.2000
3/28/2013	13	Camano Island State Park Public Ramp	0.4824	Maple Grove Ramp; Camano Is	0.2000
3/30/2013	13	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
3/31/2013	13	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
4/2/2013	14	Camano Island State Park Public Ramp	0.4824	Oak Harbor Marina & Public Ramp	0.0647
4/5/2013	14	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
4/6/2013	14	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
4/9/2013	15	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
4/12/2013	15	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
4/14/2013	15	Camano Island State Park Public Ramp	0.4824	Oak Harbor Marina & Public Ramp	0.0647
4/18/2013	16	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
4/19/2013	16	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
4/20/2013	16	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
4/23/2013	17	Camano Island State Park Public Ramp	0.4824	Oak Harbor Marina & Public Ramp	0.0647
4/27/2013	17	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
4/28/2013	17	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690
4/29/2013	18	Camano Island State Park Public Ramp	0.4824	Norton Street (Everett) Ramp	0.1690

Appendix A.2 Size measures by sample date, for sites sampled during dockside creel surveys in the Area 8-2 mark-selective Chinook fishery from November 1, 2012 through April 30, 2013.

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
11/1/2012	45	Camano Island State Park Public Ramp	0.3107	Norton Street (Everett) Ramp	0.5660
11/2/2012	45	Dagmar's Landing; Forklift Launch	0.0805	Norton Street (Everett) Ramp	0.5660
11/3/2012	45	Camano Island State Park Public Ramp	0.3107	Norton Street (Everett) Ramp	0.5660
11/5/2012	46	Camano Island State Park Public Ramp	0.3107	Norton Street (Everett) Ramp	0.5660
11/9/2012	46	Camano Island State Park Public Ramp	0.3107	Norton Street (Everett) Ramp	0.5660
11/10/2012	46	Dagmar's Landing; Forklift Launch	0.0805	Norton Street (Everett) Ramp	0.5660
11/13/2012	47	Camano Island State Park Public Ramp	0.3107	Norton Street (Everett) Ramp	0.5660
11/16/2012	47	Camano Island State Park Public Ramp	0.3107	Norton Street (Everett) Ramp	0.5660
11/17/2012	47	Dagmar's Landing; Forklift Launch	0.0805	Norton Street (Everett) Ramp	0.5660
11/19/2012	48	Camano Island State Park Public Ramp	0.3107	Norton Street (Everett) Ramp	0.5660
11/24/2012	48	Dagmar's Landing; Forklift Launch	0.0805	Norton Street (Everett) Ramp	0.5660
11/25/2012	48	Camano Island State Park Public Ramp	0.3107	Norton Street (Everett) Ramp	0.5660
11/28/2012	49	Camano Island State Park Public Ramp	0.3107	Norton Street (Everett) Ramp	0.5660
12/1/2012	49	Bayside Marine	0.0764	Norton Street (Everett) Ramp	0.6848
12/2/2012	49	Dagmar's Landing; Forklift Launch	0.0994	Norton Street (Everett) Ramp	0.6848
12/5/2012	50	Camano Island State Park Public Ramp	0.0967	Norton Street (Everett) Ramp	0.6848
12/7/2012	50	Dagmar's Landing; Forklift Launch	0.0994	Norton Street (Everett) Ramp	0.6848
12/8/2012	50	Bayside Marine	0.0764	Norton Street (Everett) Ramp	0.6848
12/12/2012	51	Dagmar's Landing; Forklift Launch	0.0994	Norton Street (Everett) Ramp	0.6848
12/15/2012	51	Bayside Marine	0.0764	Norton Street (Everett) Ramp	0.6848
12/16/2012	51	Camano Island State Park Public Ramp	0.0967	Norton Street (Everett) Ramp	0.6848
12/19/2012	52	Dagmar's Landing; Forklift Launch	0.0994	Norton Street (Everett) Ramp	0.6848
12/22/2012	52	Bayside Marine	0.0764	Norton Street (Everett) Ramp	0.6848
12/23/2012	52	Dagmar's Landing; Forklift Launch	0.0994	Norton Street (Everett) Ramp	0.6848

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
12/27/2012	53	Camano Island State Park Public Ramp	0.0967	Norton Street (Everett) Ramp	0.6848
12/28/2012	53	Camano Island State Park Public Ramp	0.0967	Norton Street (Everett) Ramp	0.6848
1/3/2013	1	Camano Island State Park Public Ramp	0.2144	Norton Street (Everett) Ramp	0.6134
1/5/2013	1	Camano Island State Park Public Ramp	0.2144	Norton Street (Everett) Ramp	0.6134
1/6/2013	1	Camano Island State Park Public Ramp	0.2144	Norton Street (Everett) Ramp	0.6134
1/8/2013	2	Camano Island State Park Public Ramp	0.2144	Norton Street (Everett) Ramp	0.6134
1/11/2013	2	Camano Island State Park Public Ramp	0.2144	Norton Street (Everett) Ramp	0.6134
1/12/2013	2	Camano Island State Park Public Ramp	0.2144	Norton Street (Everett) Ramp	0.6134
1/16/2013	3	Camano Island State Park Public Ramp	0.2144	Norton Street (Everett) Ramp	0.6134
1/18/2013	3	Camano Island State Park Public Ramp	0.2144	Norton Street (Everett) Ramp	0.6134
1/19/2013	3	Camano Island State Park Public Ramp	0.2144	Norton Street (Everett) Ramp	0.6134
1/24/2013	4	Camano Island State Park Public Ramp	0.2144	Norton Street (Everett) Ramp	0.6134
1/25/2013	4	Camano Island State Park Public Ramp	0.2144	Norton Street (Everett) Ramp	0.6134
1/26/2013	4	Camano Island State Park Public Ramp	0.2144	Norton Street (Everett) Ramp	0.6134
1/30/2013	5	Camano Island State Park Public Ramp	0.2144	Norton Street (Everett) Ramp	0.6134
2/1/2013	5	Camano Island State Park Public Ramp	0.1763	Norton Street (Everett) Ramp	0.6529
2/3/2013	5	Camano Island State Park Public Ramp	0.1763	Norton Street (Everett) Ramp	0.6529
2/7/2013	6	Camano Island State Park Public Ramp	0.1763	Norton Street (Everett) Ramp	0.6529
2/8/2013	6	Dagmar's Landing; Forklift Launch	0.0533	Norton Street (Everett) Ramp	0.6529
2/10/2013	6	Camano Island State Park Public Ramp	0.1763	Norton Street (Everett) Ramp	0.6529
2/12/2013	7	Camano Island State Park Public Ramp	0.1763	Norton Street (Everett) Ramp	0.6529
2/16/2013	7	Camano Island State Park Public Ramp	0.1763	Norton Street (Everett) Ramp	0.6529
2/17/2013	7	Camano Island State Park Public Ramp	0.1763	Norton Street (Everett) Ramp	0.6529
2/19/2013	8	Camano Island State Park Public Ramp	0.1763	Norton Street (Everett) Ramp	0.6529
2/23/2013	8	Dagmar's Landing; Forklift Launch	0.0533	Norton Street (Everett) Ramp	0.6529
2/24/2013	8	Camano Island State Park Public Ramp	0.1763	Norton Street (Everett) Ramp	0.6529
2/27/2013	9	Camano Island State Park Public Ramp	0.1763	Norton Street (Everett) Ramp	0.6529
3/2/2013	9	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
3/3/2013	9	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
3/6/2013	10	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
3/8/2013	10	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
3/9/2013	10	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
3/13/2013	11	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
3/15/2013	11	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
3/17/2013	11	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
3/21/2013	12	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
3/22/2013	12	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
3/24/2013	12	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
3/28/2013	13	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
3/30/2013	13	Dagmar's Landing; Forklift Launch	0.0598	Norton Street (Everett) Ramp	0.5400
3/31/2013	13	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
4/2/2013	14	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
4/5/2013	14	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
4/6/2013	14	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
4/9/2013	15	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
4/12/2013	15	Dagmar's Landing; Forklift Launch	0.0598	Norton Street (Everett) Ramp	0.5400
4/14/2013	15	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
4/18/2013	16	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
4/19/2013	16	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
4/20/2013	16	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
4/23/2013	17	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
4/27/2013	17	Dagmar's Landing; Forklift Launch	0.0598	Norton Street (Everett) Ramp	0.5400
4/28/2013	17	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400
4/29/2013	18	Camano Island State Park Public Ramp	0.2214	Norton Street (Everett) Ramp	0.5400

Appendix A.3 Size measures by sample date, for sites sampled during dockside creel surveys in the Area 10 mark-selective Chinook fishery from October 1, 2012 through January 31, 2013.

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
10/1/2012	41	Edmonds Boat Loft (Priv. fork lift)	0.1167	Shilshole Public Ramp	0.5033
10/5/2012	41	Armeni Public Ramp	0.2389	Shilshole Public Ramp	0.5033
10/6/2012	41	Armeni Public Ramp	0.2389	Shilshole Public Ramp	0.5033
10/11/2012	42	Armeni Public Ramp	0.2389	Shilshole Public Ramp	0.5033
10/12/2012	42	Edmonds Boat Loft (Priv. fork lift)	0.1167	Kingston Public Ramp	0.1031
10/13/2012	42	Armeni Public Ramp	0.2389	Shilshole Public Ramp	0.5033
10/18/2012	43	Armeni Public Ramp	0.2389	Shilshole Public Ramp	0.5033
10/19/2012	43	Edmonds Boat Loft (Priv. fork lift)	0.1167	Shilshole Public Ramp	0.5033
10/21/2012	43	Kingston Public Ramp	0.0519	Shilshole Public Ramp	0.1593
10/23/2012	44	Edmonds Boat Loft (Priv. fork lift)	0.1167	Shilshole Public Ramp	0.5033
10/27/2012	44	Manchester Public Ramp	0.0381	Shilshole Public Ramp	0.5033
10/28/2012	44	Armeni Public Ramp	0.7046	Shilshole Public Ramp	0.1593
11/1/2012	45	Manchester Public Ramp	0.087	Shilshole Public Ramp	0.6957
11/2/2012	45	Armeni Public Ramp	0.1957	Kingston Public Ramp	0.0217
11/3/2012	45	Armeni Public Ramp	0.1957	Kingston Public Ramp	0.0217

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
11/5/2012	46	Kingston Public Ramp	0.0217	Shilshole Public Ramp	0.6957
11/9/2012	46	Manchester Public Ramp	0.087	Shilshole Public Ramp	0.6957
11/10/2012	46	Armeni Public Ramp	0.1957	Shilshole Public Ramp	0.6957
11/13/2012	47	Armeni Public Ramp	0.1957	Shilshole Public Ramp	0.6957
11/16/2012	47	Manchester Public Ramp	0.087	Shilshole Public Ramp	0.6957
11/17/2012	47	Kingston Public Ramp	0.0217	Shilshole Public Ramp	0.6957
11/19/2012	48	Armeni Public Ramp	0.1957	Shilshole Public Ramp	0.6957
11/24/2012	48	Armeni Public Ramp	0.1957	Manchester Public Ramp	0.087
11/25/2012	48	Armeni Public Ramp	0.8505	Manchester Public Ramp	0.0634
11/28/2012	49	Armeni Public Ramp	0.1957	Shilshole Public Ramp	0.6957
12/1/2012	49	Kingston Public Ramp	0.2119	Shilshole Public Ramp	0.3004
12/2/2012	49	Armeni Public Ramp	0.6505	Manchester Public Ramp	0.095
12/5/2012	50	Kingston Public Ramp	0.2119	Shilshole Public Ramp	0.3004
12/7/2012	50	Kingston Public Ramp	0.2119	Shilshole Public Ramp	0.3004
12/8/2012	50	Edmonds Boat Loft (Priv. fork lift)	0.1904	Shilshole Public Ramp	0.3004
12/12/2012	51	Edmonds Boat Loft (Priv. fork lift)	0.1904	Shilshole Public Ramp	0.3004
12/15/2012	51	Armeni Public Ramp	0.1415	Edmonds Boat Loft (Priv. fork lift)	0.1904
12/16/2012	51	Armeni Public Ramp	0.6505	Shilshole Public Ramp	0.1283
12/19/2012	52	Edmonds Boat Loft (Priv. fork lift)	0.1904	Shilshole Public Ramp	0.3004
12/22/2012	52	Edmonds Boat Loft (Priv. fork lift)	0.1904	Shilshole Public Ramp	0.3004
12/23/2012	52	Armeni Public Ramp	0.6505	Edmonds Boat Loft (Priv. fork lift)	0.074
12/27/2012	53	Manchester Public Ramp	0.1558	Shilshole Public Ramp	0.3004
12/28/2012	53	Edmonds Boat Loft (Priv. fork lift)	0.1904	Shilshole Public Ramp	0.3004
1/3/2013	1	Manchester Public Ramp	0.2191	Shilshole Public Ramp	0.2651
1/5/2013	1	Kingston Public Ramp	0.2784	Shilshole Public Ramp	0.2651
1/6/2013	1	Kingston Public Ramp	0.2784	Shilshole Public Ramp	0.2651
1/8/2013	2	Manchester Public Ramp	0.2191	Shilshole Public Ramp	0.2651
1/11/2013	2	Kingston Public Ramp	0.2784	Shilshole Public Ramp	0.2651
1/12/2013	2	Manchester Public Ramp	0.2191	Shilshole Public Ramp	0.2651
1/16/2013	3	Kingston Public Ramp	0.2784	Shilshole Public Ramp	0.2651
1/18/2013	3	Kingston Public Ramp	0.2784	Shilshole Public Ramp	0.2651
1/19/2013	3	Edmonds Boat Loft (Priv. fork lift)	0.0965	Shilshole Public Ramp	0.2651
1/24/2013	4	Armeni Public Ramp	0.1409	Edmonds Boat Loft (Priv. fork lift)	0.0965
1/25/2013	4	Armeni Public Ramp	0.1409	Shilshole Public Ramp	0.2651
1/26/2013	4	Kingston Public Ramp	0.2784	Shilshole Public Ramp	0.2651
1/30/2013	5	Kingston Public Ramp	0.2784	Shilshole Public Ramp	0.2651

Appendix A.4 Size measures by sample date, for sites sampled during dockside creel surveys in the Area 11 mark-selective Chinook fishery from February 1, 2013 through April 30, 2013.

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
2/1/2013	5	Point Defiance Boathouse	0.2930	Point Defiance Public Ramp	0.5493
2/3/2013	5	Gig Harbor Ramp	0.1016	Point Defiance Public Ramp	0.5493
2/7/2013	6	Point Defiance Boathouse	0.2930	Point Defiance Public Ramp	0.5493
2/8/2013	6	Point Defiance Boathouse	0.2930	Point Defiance Public Ramp	0.5493
2/10/2013	6	Point Defiance Boathouse	0.2930	Point Defiance Public Ramp	0.5493
2/12/2013	7	Gig Harbor Ramp	0.1016	Point Defiance Boathouse	0.2930
2/16/2013	7	Point Defiance Boathouse	0.2930	Point Defiance Public Ramp	0.5493
2/17/2013	7	Point Defiance Boathouse	0.2930	Point Defiance Public Ramp	0.5493
2/19/2013	8	Point Defiance Boathouse	0.2930	Point Defiance Public Ramp	0.5493
2/23/2013	8	Point Defiance Boathouse	0.2930	Point Defiance Public Ramp	0.5493
2/24/2013	8	Gig Harbor Ramp	0.1016	Point Defiance Public Ramp	0.5493
2/27/2013	9	Point Defiance Boathouse	0.2930	Point Defiance Public Ramp	0.5493
3/2/2013	9	Point Defiance Boathouse	0.3730	Point Defiance Public Ramp	0.5418
3/3/2013	9	Armeni Public Ramp	0.0412	Point Defiance Public Ramp	0.5418
3/6/2013	10	Armeni Public Ramp	0.0412	Point Defiance Public Ramp	0.5418
3/8/2013	10	Point Defiance Boathouse	0.3730	Point Defiance Public Ramp	0.5418
3/9/2013	10	Point Defiance Boathouse	0.3730	Point Defiance Public Ramp	0.5418
3/13/2013	11	Point Defiance Boathouse	0.3730	Point Defiance Public Ramp	0.5418
3/15/2013	11	Point Defiance Boathouse	0.3730	Point Defiance Public Ramp	0.5418
3/17/2013	11	Armeni Public Ramp	0.0412	Point Defiance Public Ramp	0.5418
3/21/2013	12	Point Defiance Boathouse	0.3730	Point Defiance Public Ramp	0.5418
3/22/2013	12	Point Defiance Boathouse	0.3730	Point Defiance Public Ramp	0.5418
3/24/2013	12	Point Defiance Boathouse	0.3730	Point Defiance Public Ramp	0.5418
3/28/2013	13	Point Defiance Boathouse	0.3730	Point Defiance Public Ramp	0.5418
3/30/2013	13	Point Defiance Boathouse	0.3730	Point Defiance Public Ramp	0.5418
3/31/2013	13	Armeni Public Ramp	0.0412	Point Defiance Public Ramp	0.5418
4/2/2013	14	Point Defiance Boathouse	0.2487	Point Defiance Public Ramp	0.5304
4/5/2013	14	Gig Harbor Ramp	0.1452	Point Defiance Public Ramp	0.5304
4/6/2013	14	Point Defiance Boathouse	0.2487	Point Defiance Public Ramp	0.5304
4/9/2013	15	Gig Harbor Ramp	0.1452	Point Defiance Public Ramp	0.5304
4/12/2013	15	Gig Harbor Ramp	0.1452	Point Defiance Public Ramp	0.5304
4/14/2013	15	Point Defiance Boathouse	0.2487	Point Defiance Public Ramp	0.5304
4/18/2013	16	Point Defiance Boathouse	0.2487	Point Defiance Public Ramp	0.5304
4/19/2013	16	Gig Harbor Ramp	0.1452	Point Defiance Public Ramp	0.5304
4/20/2013	16	Point Defiance Boathouse	0.2487	Point Defiance Public Ramp	0.5304

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
4/23/2013	17	Point Defiance Boathouse	0.2487	Point Defiance Public Ramp	0.5304
4/27/2013	17	Point Defiance Boathouse	0.2487	Point Defiance Public Ramp	0.5304
4/28/2013	17	Gig Harbor Ramp	0.1452	Point Defiance Public Ramp	0.5304
4/29/2013	18	Point Defiance Boathouse	0.2487	Point Defiance Public Ramp	0.5304

Appendix B.1 Coded-wire tag (CWT) recoveries in the winter Area 6 mark-selective Chinook fishery from December 1, 2012 - April 10, 2013.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
6	23-Dec-12	181398	2010	R-COWICHAN R	H-COWICHAN RIVER H	CDFO		53	70151	AD
6	28-Dec-12	635768	2010	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635767	54	70152	AD
6	29-Dec-12	635086	2009	CHAMBERS CR - 12.0007	CHAMBERS CR H	WDFW		57	70146	AD
6	29-Dec-12	635297	2009	BIG SOOS CR - 09.0072	SOOS CREEK HATCHERY	WDFW	635298	71	70145	AD
6	4-Jan-13	181397	2010	R-COWICHAN R	H-COWICHAN RIVER H	CDFO		55	61831	AD
6	18-Jan-13	210915	2009	GORST CR - 15.0216	GORST CR REARING PND	SUQ		63	65024	AD
6	19-Jan-13	181590	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO	181679,181584,181592,181588	67	65025	AD
6	19-Jan-13	635366	2009	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635367	61	70391	AD
6	26-Jan-13	635469	2009	EAST SOUND BAY (SAN)	GLENWOOD SPRINGS	COOP		73	65027	AD
6	27-Jan-13	635291	2009	FINCH CR - 16.0222	HOODSPORT HATCHERY	WDFW		63	70153	AD
6	1-Feb-13	635366	2009	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635367	60	70154	AD
6	2-Feb-13	210912	2009	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	635089	65	70155	AD
6	10-Feb-13	635366	2009	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635367	71	32638	AD
6	11-Feb-13	635297	2009	BIG SOOS CR - 09.0072	SOOS CREEK HATCHERY	WDFW	635298	69	70156	AD
6	12-Feb-13	634875	2008	SIMILKAMEEN R - 490325	SIMILKAMEEN H	WDFW		84	65029	AD
6	12-Feb-13	635291	2009	FINCH CR - 16.0222	HOODSPORT HATCHERY	WDFW		65	71628	AD
6	14-Feb-13	210906	2009	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL		58	65030	AD
6	14-Feb-13	635366	2009	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635367	71	65031	AD
6	15-Feb-13	210916	2009	GORST CR - 15.0216	GORST CR REARING PND	SUQ		66	65033	AD
6	15-Feb-13	210923	2009	TULALIP CR - 07.0001	BERNIE GOBIN HATCH	TULA		63	65032	AD
6	15-Feb-13	635288	2009	VOIGHT CR - TR 10.0428	VOIGHTS CR HATCHERY	WDFW		64	70147	AD
6	15-Feb-13	635768	2010	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635767	55	70238	AD
6	15-Feb-13	636069	2010	EAST SOUND BAY (SAN)	GLENWOOD SPRINGS	COOP		59	70148	AD
6	16-Feb-13	210923	2009	TULALIP CR - 07.0001	BERNIE GOBIN HATCH	TULA		62	65382	AD
6	16-Feb-13	210928	2009	KALAMA CR - 11.0017	KALAMA CR HATCHERY	NISQ		66	65034	AD
6	17-Feb-13	634782	2008	WALLACE R - 07.0940	WALLACE R HATCHERY	WDFW		73	70150	AD
6	17-Feb-13	635291	2009	FINCH CR - 16.0222	HOODSPORT HATCHERY	WDFW		70	71629	AD
6	17-Feb-13	635366	2009	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635367	69	70149	AD
6	17-Feb-13	635697	2010	FRIDAY CR - 03.0017	SAMISH HATCHERY	WDFW	635698	60	65359	AD
6	27-Feb-13	210915	2009	GORST CR - 15.0216	GORST CR REARING PND	SUQ		66	70157	AD
6	2-Mar-13	635285	2009	SAMISH R - 03.0005	SAMISH HATCHERY	WDFW	635284	75	70158	AD
6	4-Mar-13	635288	2009	VOIGHT CR - TR 10.0428	VOIGHTS CR HATCHERY	WDFW		62	70159	AD
6	9-Mar-13	186334	2010	R-CHEMAINUS R	H-NANAIMO RIVER H	CDFO		57	63597	AD
6	13-Mar-13	635288	2009	VOIGHT CR - TR 10.0428	VOIGHTS CR HATCHERY	WDFW		70	70160	AD
6	14-Mar-13	210972	2010	GORST CR - 15.0216	GORST CR REARING PND	SUQ		56	63595	AD
6	14-Mar-13	635291	2009	FINCH CR - 16.0222	HOODSPORT HATCHERY	WDFW		61	61575	AD
6	15-Mar-13	181394	2010	R-COWICHAN R	H-COWICHAN RIVER H	CDFO		59	70195	AD

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
6	15-Mar-13	635288	2009	VOIGHT CR - TR 10.0428	VOIGHTS CR HATCHERY	WDFW		61	70193	AD
6	15-Mar-13	635291	2009	FINCH CR - 16.0222	HOODSPORT HATCHERY	WDFW		57	70194	AD
6	23-Mar-13	210827	2008	SOL DUC R - 20.0096	LONESOME CR H	QUIL		81	61838	AD
6	25-Mar-13	68768	2010	SAC R AT DISC PARK	NIMBUS FISH H	CDFW		59	70163	AD
6	25-Mar-13	181398	2010	R-COWICHAN R	H-COWICHAN RIVER H	CDFO		56	70164	AD
6	27-Mar-13	181396	2010	R-COWICHAN R	H-COWICHAN RIVER H	CDFO		61	71660	AD
6	30-Mar-13	635291	2009	FINCH CR - 16.0222	HOODSPORT HATCHERY	WDFW		79	70166	AD
6	2-Apr-13	635366	2009	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635367	64	70171	AD
6	2-Apr-13	635369	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW		60	70170	AD
6	9-Apr-13	220200	2009	NPT HATCHERY	NPT HATCHERY	NEZP		67	70176	AD
6	9-Apr-13	635283	2010	FINCH CR - 16.0222	HOODSPORT HATCHERY	WDFW		53	70179	AD
6	9-Apr-13	635285	2009	SAMISH R - 03.0005	SAMISH HATCHERY	WDFW	635284	70	70177	AD
6	9-Apr-13	635683	2010	NOOKSACK R -NF 01.0120	KENDALL CR HATCHERY	WDFW	635682	60	70175	AD
6	9-Apr-13	635692	2010	CLEAR CR - 11.0013C	CLEAR CREEK H	NISQ	210957	54	70178	UM

Appendix B.2 Coded-wire tag (CWT) recoveries in the winter Area 7 mark-selective Chinook fishery from December 1, 2012 - April 30, 2013.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
7	8-Dec-12	635369	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW		68	43263	AD
7	14-Dec-12	635573	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW	635574	69	43251	AD
7	16-Dec-12	635369	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW		74	43254	AD
7	22-Dec-12	210923	2009	TULALIP CR - 07.0001	BERNIE GOBIN HATCH	TULA		56	43241	AD
7	22-Dec-12	634769	2008	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW	635082	82	43255	AD
7	27-Dec-12	210928	2009	KALAMA CR - 11.0017	KALAMA CR HATCHERY	NISQ		70	43035	AD
7	27-Dec-12	635288	2009	VOIGHT CR - TR 10.0428	VOIGHTS CR HATCHERY	WDFW		66	43252	AD
7	27-Dec-12	634794	2009	NOOKSACK R -NF 01.0120	KENDALL CR HATCHERY	WDFW	634793	75	43256	AD
7	28-Dec-12	186310	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		56	43264	AD
7	28-Dec-12	210912	2009	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	635089	65	43265	AD
7	28-Dec-12	635366	2009	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635367	62	43266	AD
7	28-Dec-12	636069	2010	EAST SOUND BAY (SAN)	GLENWOOD SPRINGS	COOP		50	43267	AD
7	29-Dec-12	635573	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW	635574	64	43351	AD
7	30-Dec-12	90388	2009	MCKENZIE R 1	MCKENZIE HATCHERY	ODFW		61	43253	AD
7	30-Dec-12	635683	2010	NOOKSACK R -NF 01.0120	KENDALL CR HATCHERY	WDFW	635682	55	43369	AD
7	3-Jan-13	181397	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		57	43247	AD
7	4-Jan-13	635366	2009	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635367	75	43354	AD
7	5-Jan-13	634787	2008	FALLERT CR - 27.0017	FALLERT CR HATCHERY	WDFW		78	28891	AD
7	5-Jan-13	635366	2009	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635367	57	32637	AD

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
7	6-Jan-13	635769	2010	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW		63	43355	AD
7	11-Jan-13	635291	2009	FINCH CR - 16.0222	HOODSPORT HATCHERY	WDFW		66	43268	AD
7	12-Jan-13	635366	2009	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635367	66	43269	AD
7	12-Jan-13	210916	2009	GORST CR - 15.0216	GORST CR REARING PND	SUQ		66	43270	AD
7	12-Jan-13	210923	2009	TULALIP CR - 07.0001	BERNIE GOBIN HATCH	TULA		66	43271	AD
7	12-Jan-13	54278	2009	SPRING CR - 29.0159	SPRING CR NFH	FWS	54283	79	43352	AD
7	12-Jan-13	635573	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW	635574	72	43353	AD
7	12-Jan-13	210928	2009	KALAMA CR - 11.0017	KALAMA CR HATCHERY	NISQ		62	43364	AD
7	15-Jan-13	635369	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW		NA	12491	AD
7	17-Jan-13	635697	2010	FRIDAY CR - 03.0018	SAMISH HATCHERY	WDFW	635698	53	43154	AD
7	18-Jan-13	635297	2009	BIG SOOS CR - 09.0072	SOOS CREEK HATCHERY	WDFW	635298	64	43370	AD
7	19-Jan-13	634769	2008	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW	635082	84	43272	AD
7	20-Jan-13	181396	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		64	43371	AD
7	23-Jan-13	635369	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW		68	43273	AD
7	23-Jan-13	210905	2009	CLEAR CR - 11.0013C	CLEAR CREEK H	NISQ	635096	63	43274	AD
7	25-Jan-13	180888	2009	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		70	43275	AD
7	26-Jan-13	181399	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		55	43356	AD
7	26-Jan-13	210958	2010	WHITEHORSE SPRINGS	STILLAGUAMISH HATCH	STIL		64	43365	AD
7	27-Jan-13	210963	2010	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	635695	61	43372	AD
7	1-Feb-13	635697	2010	FRIDAY CR - 03.0020	SAMISH HATCHERY	WDFW	635698	66	43373	AD
7	1-Feb-13	635369	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW		70	74001	AD
7	2-Feb-13	635292	2009	WALLACE R - 07.0940	WALLACE R HATCHERY	WDFW	635293	62	43357	AD
7	2-Feb-13	181592	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO	181679,181584,181588,181590	60	43358	AD
7	8-Feb-13	635768	2010	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635767	55	62246	AD
7	8-Feb-13	635573	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW	635574	63	74002	AD
7	8-Feb-13	181588	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO	181679,181584,181592,181590	72	74003	AD
7	8-Feb-13	635285	2009	SAMISH R - 03.0005	SAMISH HATCHERY	WDFW	635284	69	74401	AD
7	8-Feb-13	181588	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO	181679,181584,181592,181590	56	74402	AD
7	8-Feb-13	636069	2010	EAST SOUND BAY (SAN)	GLENWOOD SPRINGS	COOP		57	74403	AD
7	8-Feb-13	635573	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW	635574	65	74404	AD
7	8-Feb-13	635282	2010	WALLACE R - 07.0940	WALLACE R HATCHERY	WDFW	635679	53	74405	AD
7	8-Feb-13	635369	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW		65	74406	AD
7	8-Feb-13	635288	2009	VOIGHT CR - TR 10.0428	VOIGHTS CR HATCHERY	WDFW		63	74407	AD
7	8-Feb-13	635697	2010	FRIDAY CR - 03.0024	SAMISH HATCHERY	WDFW	635698	62	74409	AD
7	8-Feb-13	181398	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		57	74410	AD
7	9-Feb-13	636069	2010	EAST SOUND BAY (SAN)	GLENWOOD SPRINGS	COOP		54	43360	AD
7	9-Feb-13	181590	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO	181679,181584,181592,181588	63	74411	AD
7	9-Feb-13	635697	2010	FRIDAY CR - 03.0025	SAMISH HATCHERY	WDFW	635698	54	74412	AD
7	9-Feb-13	181584	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO	181679,181592,181588,181590	58	74413	AD
7	9-Feb-13	181584	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO	181679,181592,181588,181590	62	74414	AD

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
7	9-Feb-13	635697	2010	FRIDAY CR - 03.0026	SAMISH HATCHERY	WDFW	635698	58	74415	AD
7	9-Feb-13	181590	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO	181679,181584,181592,181588	62	74416	AD
7	9-Feb-13	210912	2009	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	635089	63	74417	AD
7	10-Feb-13	634769	2008	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW	635082	77	65028	AD
7	10-Feb-13	181592	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO	181679,181584,181588,181590	64	74004	AD
7	10-Feb-13	181396	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		71	74005	AD
7	16-Feb-13	634794	2009	NOOKSACK R -NF 01.0120	KENDALL CR HATCHERY	WDFW	634793	64	43359	AD
7	16-Feb-13	181399	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		60	62456	AD
7	17-Feb-13	210928	2009	KALAMA CR - 11.0017	KALAMA CR HATCHERY	NISQ		70	74051	AD
7	1-Mar-13	635288	2009	VOIGHT CR - TR 10.0428	VOIGHTS CR HATCHERY	WDFW		58	65360	AD
7	3-Mar-13	181396	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		NA	74006	AD
7	3-Mar-13	210973	2010	GORST CR - 15.0216	GORST CR REARING PND	SUQ		54	74007	AD
7	8-Mar-13	210958	2010	WHITEHORSE SPRINGS	STILLAGUAMISH HATCH	STIL		61	74008	AD
7	9-Mar-13	635292	2009	WALLACE R - 07.0940	WALLACE R HATCHERY	WDFW	635293	65	32640	AD
7	9-Mar-13	635369	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW		78	32641	AD
7	9-Mar-13	210906	2009	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL		70	43361	AD
7	9-Mar-13	635697	2010	FRIDAY CR - 03.0019	SAMISH HATCHERY	WDFW	635698	57	43363	AD
7	9-Mar-13	180493	2009	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		81	74009	AD
7	9-Mar-13	635369	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW		77	74010	AD
7	15-Mar-13	181588	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO	181679,181584,181592,181590	53	43248	AD
7	16-Mar-13	181396	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		64	74011	AD
7	17-Mar-13	181397	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		59	62453	AD
7	17-Mar-13	635573	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW	635574	64	74052	AD
7	22-Mar-13	210912	2009	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	635089	72	43379	AD
7	23-Mar-13	635366	2009	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635367	64	43008	AD
7	23-Mar-13	635697	2010	FRIDAY CR - 03.0017	SAMISH HATCHERY	WDFW	635698	53	43009	AD
7	23-Mar-13	181398	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		67	43380	AD
7	24-Mar-13	635288	2009	VOIGHT CR - TR 10.0428	VOIGHTS CR HATCHERY	WDFW		68	74012	AD
7	28-Mar-13	210957	2010	CLEAR CR - 11.0013C	CLEAR CREEK H	NISQ	635692	55	74351	AD
7	28-Mar-13	635282	2010	WALLACE R - 07.0940	WALLACE R HATCHERY	WDFW	635679	59	74352	AD
7	29-Mar-13	181398	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		62	74353	AD
7	29-Mar-13	181395	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		70	74354	AD
7	30-Mar-13	635590	2010	WALLACE R - 07.0940	WALLACE R HATCHERY	WDFW		56	74054	AD
7	30-Mar-13	635369	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW		78	74055	AD
7	30-Mar-13	635683	2010	NOOKSACK R -NF 01.0120	KENDALL CR HATCHERY	WDFW	635682	60	74056	AD
7	30-Mar-13	636069	2010	EAST SOUND BAY (SAN)	GLENWOOD SPRINGS	COOP		67	74057	AD
7	30-Mar-13	635086	2009	CHAMBERS CR - 12.0007	CHAMBERS CR H	WDFW		71	74058	AD
7	30-Mar-13	635292	2009	WALLACE R - 07.0940	WALLACE R HATCHERY	WDFW	635293	75	74059	AD
7	30-Mar-13	210916	2009	GORST CR - 15.0216	GORST CR REARING PND	SUQ		67	74060	AD
7	30-Mar-13	635292	2009	WALLACE R - 07.0940	WALLACE R HATCHERY	WDFW	635293	68	74061	AD

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
7	30-Mar-13	635288	2009	VOIGHT CR - TR 10.0428	VOIGHTS CR HATCHERY	WDFW		66	74062	AD
7	30-Mar-13	181397	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		58	74063	AD
7	30-Mar-13	635768	2010	PURDY CR - 16.0005	GEORGE ADAMS H	WDFW	635767	55	74064	AD
7	30-Mar-13	635297	2009	BIG SOOS CR - 09.0072	SOOS CREEK HATCHERY	WDFW	635298	67	74067	AD
7	31-Mar-13	635769	2010	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW		62	62188	AD
7	31-Mar-13	181398	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		66	74013	AD
7	31-Mar-13	635285	2009	SAMISH R - 03.0005	SAMISH HATCHERY	WDFW	635284	70	74069	AD
7	31-Mar-13	635369	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW		66	74070	AD
7	31-Mar-13	181470	2010	R-HARRISON R	H-CHEHALIS RIVER H	CDFO		62	74072	AD
7	31-Mar-13	635573	2009	CASCADE R - 03.1411	MARBLEMOUNT H	WDFW	635574	68	74074	AD
7	31-Mar-13	635288	2009	VOIGHT CR - TR 10.0428	VOIGHTS CR HATCHERY	WDFW		62	74075	AD
7	31-Mar-13	635697	2010	FRIDAY CR - 03.0022	SAMISH HATCHERY	WDFW	635698	59	74076	AD
7	31-Mar-13	210923	2009	TULALIP CR - 07.0001	BERNIE GOBIN HATCH	TULA		79	74077	AD
7	31-Mar-13	181584	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO	181679,181592,181588,181590	66	74078	AD
7	31-Mar-13	181394	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO		51	74079	AD
7	31-Mar-13	635697	2010	FRIDAY CR - 03.0023	SAMISH HATCHERY	WDFW	635698	53	74356	AD
7	11-Apr-13	635697	2010	FRIDAY CR - 03.0021	SAMISH HATCHERY	WDFW	635698	66	62182	AD
7	28-Apr-13	635291	2009	FINCH CR - 16.0222	HOODSPORT HATCHERY	WDFW		69	74014	AD

Appendix B.3 Coded-wire tag (CWT) recoveries in the winter Areas 8-1 and 8-2 mark-selective Chinook fisheries from November 1, 2012 - April 30, 2013.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
81	3-Nov-12	181592	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO	181679,181584,181588,181590	56	28893	AD
81	25-Nov-12	210973	2010	GORST CR 15.0216	GORST CR REARING PND	SUQ		62	62041	AD
81	23-Dec-12	635769	2010	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		61	43051	AD
81	19-Feb-13	635767	2010	PURDY CR 16.0005	GEORGE ADAMS H	WDFW	635768	89	62044	AD
82	8-Dec-12	634295	2009	COWLITZ R 26.0002	COWLITZ SALMON H	WDFW		62	72534	AD
82	27-Dec-12	635288	2009	VOIGHT CR TR 10.0428	VOIGHTS CR HATCHERY	WDFW		65	72535	AD
82	6-Mar-13	210928	2009	KALAMA CR 11.0017	KALAMA CR HATCHERY	NISQ		72	62045	AD
82	13-Apr-13	210972	2010	GORST CR 15.0216	GORST CR REARING PND	SUQ		63	72656	AD

Appendix B.4 Coded-wire tag (CWT) recoveries in the winter Area 9 mark-selective Chinook fishery from November 1-30, 2012 and January 16 - April 15, 2013.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
9	1-Nov-12	210963	2010	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	635695	57	72531	AD
9	1-Nov-12	210916	2009	GORST CR 15.0216	GORST CR REARING PND	SUQ		65	72532	AD
9	5-Nov-12	635288	2009	VOIGHT CR TR 10.0428	VOIGHTS CR HATCHERY	WDFW		60	72533	AD
9	10-Nov-12	181588	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO	181679,181584,181592,181590	58	66955	AD
9	25-Nov-12	635288	2009	VOIGHT CR TR 10.0428	VOIGHTS CR HATCHERY	WDFW		64	62792	AD
9	16-Jan-13	181396	2010	R-COWICHAN R	H-COWICHAN RIVER H	CDFO		59	66956	AD
9	16-Jan-13	635297	2009	BIG SOOS CR 09.0072	SOOS CREEK HATCHERY	WDFW	635298	60	72536	AD
9	18-Jan-13	210963	2010	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	635695	NA	62793	AD
9	8-Feb-13	210963	2010	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	635695	59	71897	AD
9	16-Feb-13	635683	2010	NOOKSACK R -NF 01.0120	KENDALL CR HATCHERY	WDFW	635682	61	70212	AD
9	16-Feb-13	635369	2009	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		60	70239	AD
9	17-Feb-13	635369	2009	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		68	63591	AD
9	15-Mar-13	181395	2010	R-COWICHAN R	H-COWICHAN RIVER H	CDFO		66	72655	AD
9	24-Mar-13	635697	2010	FRIDAY CR 03.0017	SAMISH HATCHERY	WDFW	635698	58	72537	AD

Appendix B.5 Coded-wire tag (CWT) recoveries in the winter Area 10 mark-selective Chinook fishery from October 1, 2012 - January 31, 2013.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
10	21-Oct-12	181584	2010	R-CHILLIWACK R	H-CHILLIWACK RIVER H	CDFO	181679,181592,181588,181590	56	72641	AD

Appendix B.6 Coded-wire tag (CWT) recoveries in the winter Area 11 mark-selective Chinook fishery from February 1 - April 30, 2013.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
11	26-Feb-13	210957	2010	CLEAR CR 11.0013C	CLEAR CREEK H	NISQ	635692	59	42230	AD

Appendix B.7 Coded-wire tag (CWT) recoveries in the winter Area 12 mark-selective Chinook fishery from October 1 - December 31, 2012 and February 1 - April 30, 2013.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
12	2-Mar-13	635697	2010	FRIDAY CR 03.0017	SAMISH HATCHERY	WDFW	635698	57	42064	AD
12	3-Mar-13	181471	2010	R-HARRISON R	H-CHEHALIS RIVER H	CDFO		63	42065	AD
12	3-Mar-13	635291	2009	FINCH CR 16.0222	HOODSPORT HATCHERY	WDFW		71	42066	AD